ATARI ST USER

The top-selling Atari ST magazine

Volume 4
Number 3
May 1989
£1.95

Incorporating ST UPDATE

How to fake an old master

Integrex ink jet printer evaluated

LISTING

Convert your colour pictures to monochrome

REVIEWS

Daatascan hand scanner, K-Spread 3 spreadsheet, Clipart and Drawart, eprom programmer plus two hard discs compared

FEATURE

Capturing weather maps from space – DIY guide

GAMES

Barbarian II, Prison, Mini Golf, Zany Golf, Thunderwing, Gomoku, Operation Neptune, Bismark and many more

In this month's pullout:

Coping with spreadsheets
Floating point C routines
Reading data in Basic
Opening Gem windows

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PALACE SOFTWARE

The word is PROTEXT...

More and more people are now recognising Protext as the word processor that the ST has been waiting for. Developed over a period of 4 years, Protext has been designed to be fast, flexible and efficient. The emphasis is very much on word processing.

Unlike its competitors, Protext does not use Gem. The scrolling speed is four times faster than that of Gem based word processors. Yet Protext is still WYSIWYG and still allows access to desktop accessories.

Protext is faster all round; for example the search and replace command is six times faster than First Word+, and the spelling checker, too, is faster.

Protext has all the features you would expect from a good word processor - many text editing commands, print commands, spelling checker and mailmerge. What you might not expect though, is the refinement and thought that has been put in to make Protext ideal for the novice or the experienced user alike.

"To sum up, Protext is probably the most powerful word processor on the Atari ST and is quite likely to become the best selling too"... ST USER 4/88

..."At last one that seems to fit most of what I call essential in a word processor" PAGE 6 #34

..."Extremely good for manipulating and merging large text files". "Wins hands down as the all round package". ST USER 8/88

A brief summary of some of Protext's features ...

Box manipulation	move, copy, or delete any box as well as blocks
Configuration	configure most features to your own preferences
Dictionaries	add/delete words to/from supplied dictionary. Create additional specialised dictionaries.
Disc utilities	copy files, erase, rename, type, create directory, change directory, remove directory, catalogue files
Exec files	store sequences of commands in files for easy use
File conversion	flexible file conversion utility for other WP files
Find & replace	very powerful and fast with many options.
Foreign languages	10 built in keyboard languages. Easy to use accented letters: ä æ ç ö ü è é ß à ù ô ê ñ etc.
Headers & footers	up to 9 lines of text, different even/odd headers and footers possible, automatic page numbering
Help	edit and command help available on-screen
Keyboard macros	string any sequence of letters together on a single key e.g. "Yours sincerely". Load and save macros.
Line spacing	variable in half lines, including 0, ½, 1, 1½, 2, 2½, 3
Printer support	works with any parallel or serial printer. Wide range of printer drivers supplied, incl. lasers and 24-pin printers; or create your own drivers or edit ours.
Printing styles	bold, condensed, double strike, elite, italics, enlarged, pica, NLQ, subscript, superscript, microspacing, proportional spacing, any other printer fonts
Program mode	suppresses formatting; auto-indent; set tab stops
Proportional text	will print proportionally spaced, right justified text
Quick dictionary	dictionary held in memory is very fast
Ruler lines	any number of ruler lines to define document layout, left/right margins and normal/decimal tab stops
Spelling checker	check from disc or current text. Suggests alternative spellings. Works with foreign languages
Symbol	Screen character symbols may be redefined
Time and date	set time and date, use within document
Tutorial files	help you to start using Protext
Two file editing	two documents in memory, copy text between them
Typewriter mode	direct printing for envelopes etc.
Undelete	retrieve text deleted in error
Word count	quick count at any time, whole text or just a block
Word puzzles	anagram and crossword solving features
Wysiwyg	on-screen bold, underline, italics, sub/superscript

Mail merge

The most comprehensive mail merge program available. Use it for labels, personalised "standard letters", club membership lists, and much more:

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* ask for variables from keyboard
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* reformat whilst printing
* conditional printing and repeat-until loop constructs
* numeric calculations and string expressions including substrings
* commands to record information to a separate file
* operators +,-,*,/,<,>,<=,>=,=,<>,IN,NOTIN

Protext is a professional word processor

If you want a fast efficient program for processing words, get PROTEXT

STOP PRESS. The latest version (4.0) includes footnotes, spell check whilst typing, a fast First Word file conversion program, background printing, macro record mode, automatic reformatting and a new menu-driven configuration program.

The conversion program will rapidly convert your old First Word/First Word+ files into Protext format, preserving your printer codes and layout.

The background printing feature allows you to continue your word processing while waiting for your printer to finish printing.

Please send SAE for reprint of review plus feature summary.

Prices

	IBM PC	Atari ST	Amiga
Protext v4	£99.95	£99.95	£99.95
Protext Filer	£24.95	£24.95	£24.95
Protext Office	£34.95	£34.95	£34.95
Protext v4 demo	£7.00	£7.00	£7.00

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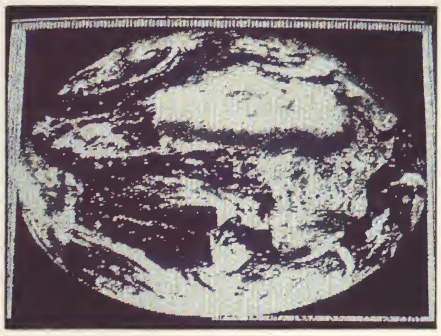

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This month we feature useful tips for the top-selling Xenon, Better Dead than Alien and Carrier Command.
87

MORE FOR YOUR BINDER ...

Part 9 of The Complete Atari ST.
Over the months this illustrated pull-out, which comes free with *Atari ST User,* is building up into the definitive guide to the working and uses of this powerful micro.

Continuing this month with:

- **Manipulating windows and eventing in ST Gem.**
- **A guide to floating point variables in C programming.**
- **A closer look at working a business spreadsheet.**
- **An in depth appraisal of the use of arrays in Basic programming.**

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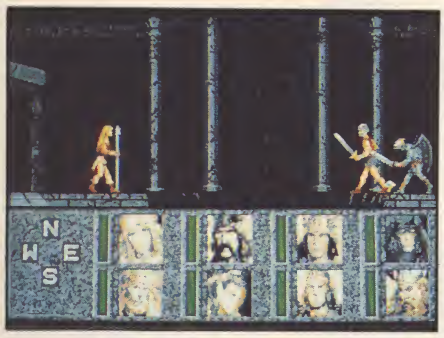

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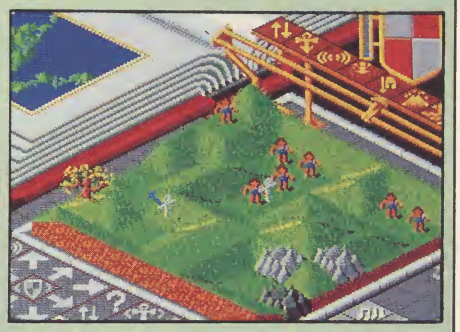
ATARI ST USER GAME

Populous



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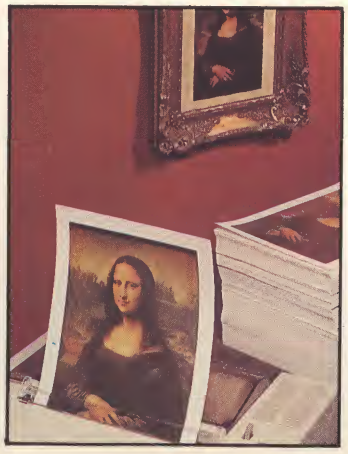

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Softstuff's latest educational program for children is put through its paces. **127**

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—The Worlds Most Sophisticated Personal Finance Program—

If you run a personal bank account and have an Atari ST then you need "PERSONAL FINANCE MANAGER".

AS EASY TO USE AS A CALCULATOR
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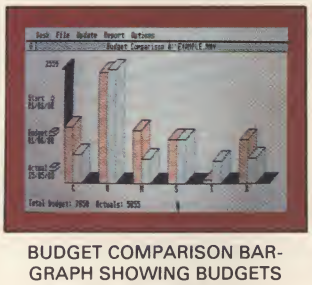
Home Finance Program By Peter Veale.

Here's what the critics say:
"PFM is one of those rare programs with which it is easy to feel comfortable from the first time you run it."
Ron Massey, ST USER

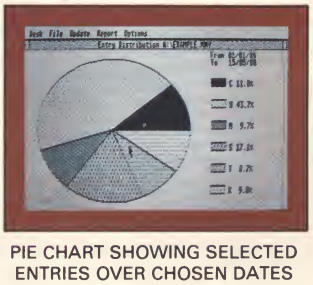
"Personal Finance Manager is a sophisticated home financial package, it will probably help you save money."
ST UPDATE.

"PFM is just the ticket if your expenditure is as disorganised as mine."
POPULAR COMPUTING WEEKLY.

MAIN ACCOUNT SCREEN



BUDGET COMPARISON BAR-GRAPH SHOWING BUDGETS & ACTUAL EXPENDITURE OR INCOME



PIE CHART SHOWING SELECTED ENTRIES OVER CHOSEN DATES

BALANCE DISPLAY SHOWING HIGHS & LOWS OVER SELECTED DATES

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ST music heads for the Sky

HOME music making with the ST is taking off in a big way and has even hit the screens of satellite TV. Sky Television featured the ST and Steinberg's PRO12 software on its weekly programme Musicbox plus an interview with Daryl Stickley, the music specialist from Atari distributors Hugh Symons.

With presenter Tony Dortie, Daryl introduced viewers to making music with an Atari 1040, colour monitor and Roland synthesiser.

"The seven minute slot was aimed at newcomers to the Atari music scene", he told *Atari ST User*. "I showed how you can manipulate sounds, correct mistakes and put together a very accurate piece of music by yourself".

Increasing interest in music with the ST has also been underlined by impressive sales of the Atari Music Pack. Just two months after signing an exclusive deal to distribute the bundle, Hugh Symons had moved its entire stock of 500 packs, originally scheduled to cover a three month period.

Initially these went to music retailers, but to cover a wider spectrum of the market they are now also going to computer shops.

The 1040STFM is bundled with Steinberg's PRO 12 software, a cut down version of its top selling PRO24 package. This entry level pack costs £499 or can be bought with monochrome monitor for £599.

Drives deal

THROUGH a new deal between Frontier Software and Supra, ST users can now save £100 on the 30Mb SupraDrive.

Announcing price cuts of Frontier's most popular drive, marketing manager Martin Walsh said: "We are happy to be able to pass on the benefits of our renegotiation in pricing with Supra. I am sure that the new retail price of £499.95 will make the 30Mb drives accessible to even more Atari ST users".

Previously £599.95, the 30Mb drive features a 28ms average access time, formatted capacity of over 32Mb, full DMA pass through, an SCSI port, a clock/calendar and built-in power supply.

Supra Hard Disc Utilities can now be acquired from Frontier (0423 67140) as a separate stock item. Price £49.95.

New German imports

GERMAN software house EAS is now concentrating on arcade games for the 16 bit market. Its latest offering for the ST is role playing game Kayden Garth which is being distributed in the UK by Active Sales (01-384 2701) and sells for £19.95.

Robert Stallibrass of Active tells Atari ST User *that four more titles are on the way. Roll Over features computer men pushing stones into holes in a playing field and rolling over their enemies with stone blocks.*

Animal Games includes events such as monkey climbing, crocodile obstacle swimming and elephant coconut shooting.

The other two titles are being unveiled at the European Computer Trade Show on April 16.

Weird dreams go out on television

MILLIONS of Saturday morning TV viewers have been experiencing weird dreams thanks to the ST. The Rainbird game Weird Dreams has been featured on TVS' Motormouth programme in what is believed to be the first adaptation of its kind between a computer game and television.

In the pilot for the programme, Motormouth presenter Neil Buchanan used special effects to enter the world of Weird Dreams itself where he introduced viewers to such carnivorous creatures as the Maggot Monster and a flock of hideous vampire bats.

Each week Neil telephoned one viewer to ask 10 general knowledge questions and answers were tied into the computer game. Correct replies allowed the hero to go on to the next scene as the game was on screen but a wrong answer kept him back.

Programmer James Hutchby and graphics artist Herman Serrano had worked for nearly two months to adapt the game for the TV show.

They believe it is the first time a computer game has been tailored to such a degree for a specific television programme. Motormouth gave Weird Dreams 40 minutes prime airtime over an eight week period.

Assistant marketing manager for Rainbird, Clare Edgeley said: "With the interest generated in the game at last year's PC Show and the extensive airtime gained on Motormouth, we expect Weird Dreams to be one of the best selling games in 1989".

The TV version of Weird Dreams was run on an Atari ST Mega 2 using a Genlock board to allow it to interface with TV video equipment. Spot and atmospheric effects were generated on an Akai sound effect box, triggered by the game through the ST's Midi interface.

The ST version of Weird Dreams costs £24.99.

DATAVID-ST is one of a new range of PAL encoders designed to help video makers achieve high quality computer graphics. For use on the Atari ST, it comes from Interactive Media Resources (0902 25444). The Datavid series accepts RGB input and gives near broadcast quality PAL composite video output suitable for recording and for feeding into videomixers and monitors. The ST model costs £179.

Be part of the action

at the

ATARI

COMPUTER SHOW

Alexandra Palace, Wood Green, London N22
Friday to Sunday, June 23 to 25, 1989
Fri & Sat: 10am – 6pm,
Sun: 10am – 4pm

The Atari Computer Show is back – with many new products and developments. Atari has grown to be one of the major players in the computer world, supported by an incredible wealth of top quality applications, games and utilities – all on view at this show.

MIDI

All the latest hardware and software in the rapidly expanding scene of micro music will be on display, including keyboards, samplers, sequencers and professional studio software.

With an Atari/Midi setup you can produce top-quality music, quickly and simply – editing out mistakes in a way that's impossible with live recordings. So if you're in any way interested in making music with your micro this is the place to come to find out all about it.

CAD

Computer Aided Design has grown to become one of the most important uses for modern computers. With a CAD system you can design houses, cars and electronic circuits – in a fraction of the time it would take you with pen and paper.

With the high speed and powerful graphics of Atari micros it's hardly surprising that bigger and better CAD programs are pushing back the frontiers all the time.

And only at the Atari Computer Show can you see all the latest systems under one roof.

BUSINESS

Many companies will be demonstrating their latest software and hardware, specially designed to release the full business potential of Atari computers.

As well as products for the 8-bit and ST, you'll be able to try out applications for the powerful Atari PC compatible series.

And you'll also be able to get expert advice from professionals.

DTP

The art of combining text and pictures is big business nowadays because, with a low-cost DTP program, you can create anything from a club newsletter to a monthly magazine or book.

At the show you'll be able to try out the latest scanners, digitisers and super-fast programs, and get a first-hand glimpse at the way DTP is set to develop in the future.

GAMES

Atari computers are renowned for their ability to run fast-action arcade-quality games.

The range of new software on show will demonstrate how the power of these machines is continually being stretched, producing faster and even more addictive games with superb graphics.

The winning entry in the STOS Gameswriter of the Year Award will be revealed, and several new exciting STOS accessories will be shown for the first time.

If you're a keen game player, you'll find there's so much on offer at the show – you're guaranteed a real treat!

DON'T MISS IT

So for a great day out – whether you want to see what the future holds for Atari computer users, take advantage of the bargains on offer or get advice on specific applications – the Atari Computer Show is the place to go.

And if you send in the coupon now, you'll save £1 off the price of a single ticket!

SPECIAL OFFER

For the first time we are now offering a family ticket for just £11, allowing entry for two adults and two children. So you can save up to £6 off the usual entry price!

How To Get There

Alexandra Palace is so easy to get to by car, rail, underground or bus. It has its own British Rail station, just nine minutes away from King's Cross, and there's a free bus service shuttling between station and show every 10 minutes.

If you're travelling by road, the show is only 15 minutes away from Junction 25 on the M25. Car parking is free.

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ST5

New fonts will help ethnic minorities

THE Atari ST is of growing social significance to two million members of ethnic minorities who fear that use of their mother tongues is dying out in the UK.

It can also help many deprived of the full benefits of their citizenship because they cannot read English well.

Bengali, Gujarati, Urdu and Farsi are just four examples from a host of multilinqual fonts now available on the ST with the Signum 2 document processor.

They come from Gate Seven Computers (01-602 5186) through close cooperation with Signa Publishing Systems and are aimed at multi-cultural education and community work.

"Too much educational and community computing happens on machines that ordinary people cannot afford to own. Learning stops dead at the school gate", said Mike Dale, managing director of Signa.

"Signum 2 runs on a machine which thousands of people already have at home and in their business. It is no longer reasonable for good intentions towards people to be expressed in a second class way.

"With Signum 2 everyone is treated as first class. It has the potential to make a vast difference to the way people live and express themselves".

Other fonts available are Arabic, Greek, Hebrew, Hindi, Ladakhi, Marathi, Nepali, Punjabi, Russian, Sanskrit, Tibetan and all European languages.

Arabic (9 pin, 24 pin, Laser)
وقال القائد الاسر ائيلي ن زعماع الانتفاضة السريين شكلوا «لجان صدام»
لتنفيذ القرارات اتي تتخذها القيادة وحث الفلسطينيين على استمرار
المظاهرات .

Bengali (9-pin, 24-pin, Laser)
টাওয়ার হ্যামলেটস কাউন্সিলের এই সিদ্ধান্তের ফলে শুধু যে. ৪৬টি পরিবারই
ক্ষতিগ্রস্ত হচ্ছেন তা নয় । এই নীতি কার্যকর হলে বিলেতের অন্যান্য বর্ণবাদী
কাউন্সলগুলোও এই নীতি কার্যকর করতে উদ্যোগী হতে পারে । এবং এতে করে
বিলেতের বর্ণ সংখ্যালয়ু সম্প্রদায়ের বিপুল সংখ্যক নাগরিক ক্ষতিগ্রস্ত হতে পারেন ।

Devanagari (Sanskrit, Hindi, Marathi, Nepali) (9-pin, 24-pin, Laser)
हर वर्ष नये नियम, अधिक कठिन तरीके और वह परिवर्तन जिस तरीके से कम्यूनिटी
पुलिस के पास आती है कि पालिस उन के लिये वह स्तर और आवश्यक सेवा प्रदान करे,
आते हैं । आज के चैलेंजों को पूरा करने के लिये कांस्टैबुलरी का ऊपर से नीचे तक का
दोबारा नया प्रबन्ध किया गया है ।

Some of Signum's new fonts

Sample super sounds

STOS allows you to create your own games. Now STOS Maestro will give them a new level of realism with dramatic sound effects.

Maestro, the latest STOS software from Mandarin (0625 878888) is a powerful sampling system that allows you to manipulate sound.

It includes a sophisticated drum machine with 11 different samples of drum patterns, example programs to show you how to incorporate sound in your games, additional routines in C and assembly language for the more ambitious and a second disc with 30 sounds including explosions, phaser fire, sirens, helicopter rotor blades and screams.

The software costs £24.95 but for £69.95 you can have Maestro plus a precision made sampling cartridge with built-in high frequency filter to connect to a hi-fi, personal stereo, radio or compact disc player.

To speed up game creation, Mandarin has also brought out STOS Compiler which works at a rate of more than 500 instructions a second, so that even a big game can be compiled in around 30 seconds.

To bring home made games closer to the speed of commercial machine code ones, you can copy the new extenson file on to the working STOS disc then when STOS is booted, the compiler is available within two key presses.

Included with the disc are a comprehensive manual and a new single precision floating point routine which you can copy on to your working STOS disc. The compiler costs £19.95.

NEWSBEAT ROUNDUP

CLAIMED to be Europe's largest supplier of syndicated artwork, Adverkits International has developed the images for Advertisers Collection, the latest offering from Mirrorsoft (01-377 4645).

It gives over 50 different multipurpose frames, headers and logo graphics for producing advertising and sales promotional material on the ST.

Advertisers Collection costs £34.48 and can be used with Fleet Street Publisher, Calamus, Publishing Partner Professional and Timeworks Desktop Publisher.

★ ★ ★

WHEN champagne corks popped at the South Wales firm Kador (0443 740281) it didn't matter if the bubbly overflowed. Staff was celebrating the launch of the 150th model of their Seal 'n Type spillcovers for computer keyboards.

The Atari ST model sells for £10.95.

★ ★ ★

EUROPEAN pool champion Maltese Joe Barbara has endorsed 3D Pool, the latest sports simulation game from Firebird (01-631 5206).

Players can vie with each other or take part in a knockout tournament before taking on Maltese Joe in the final. Price £19.99.

★ ★ ★

THE new craze of collecting Airmiles vouchers has now hit the computer world. Loughborough based mail order firm Compumart (0509 610444) is offering the vouchers with its Atari 520STFM superpack deal.

Claiming to be the first in the business to offer Airmiles, Compumart has also been throwing in a £39.99 Fuji camera with the deal.

"Collect your Airmiles vouchers and trade them for a ticket to Basingstoke or Bermuda, Loughborough or Los Angeles", says the firm.

Basingstoke and Loughborough are the more realistic. With the £399 superpack you get just 10 free airmiles.

Focus on presentations

THE prestigious Desktop Publishing Show organised by Database Exhibitions will take on a new look this autumn with Presentations '89, a unique show within a show, highlighting the art of professional presentation.

It will be held at the London Arena in the city's fast developing Docklands area from October 4 to 6.

PIRA, the leading independent advisory service will also be providing a team of recognised authorities to run a series of seminars covering the full range of communication skills.

Database Exhibitions managing director Michael Meakin said: "The new professionals in computer graphics and the more traditionally based audio-visual specialists have much to offer individually and even more when they come together in a single forum. Converging technologies is the way forward, this is what Presentations '89 is all about".

STRATEGY is the secret of Risk, the latest offering from Mastertronic (01-727 8070). A computer implementation of the original board game it allows you to plan warfare solo against the computer or with up to five friends. Price £19.95.

Prizewinner jets out

GARETH Dew swapped the cider apples of his home in Bridgewater, Somerset for The Big Apple when he jetted over to New York courtesy of Atari ST User.

Gareth, pictured with his travelling companion at Manchester International Airport's check-in area, won the dream trip as first prize in our £4,000 competition.

Thousands of readers correctly answered the eight questions on New York in the June and July issues of Atari ST User *last year. Gareth's entry was first to be opened and he flew out of Manchester for three nights at the New York Hilton with £200 spending money thrown in.*

Out of the HAT for school

HAT Software (0743 231763) has produced three new educational programs for the Atari ST.

Jigspell combines the fun of completing a jigsaw with learning to spell. Aimed at primary school children it costs £14.95.

Stage Two is an intermediate art package designed to fill what HAT believes is a gap in the market. It has 30 art functions and is the only product that will grab pictures from the Vidi ST digitiser for inclusion in the art package. It sells for £14.95.

HAT's third product is Blow-Up, a low resolution program that will take Degas-compatible pictures and blow them up. It will store them on disc then print out, a facility long awaited by many teachers. Blow-Up costs £12.95.

SNOOKER, pool, billiards and the no-pocket cannon game Carom are all included in Steve Davis World Snooker, the latest Atari ST game from CDS Software (0302 321134).

A 16 bit follow-up to Steve Davis Snooker, it allows players to zoom in on shots add spin and vary the strength. Two players can pit their skills against each other or one can play Steve Davis whose expertise has been programmed into the software. Price £19.99.

AMS package taken over

DATABASE Software (0625 878888) has acquired sole manufacturing rights for AMS package Flair Paint. This was the only Atari ST package to have been developed by Warrington-based AMS. The product, packaging and price of £34.99 will remain the same, but will go out under the Database label.

"Flair Paint is a beautifully designed art package with many unique features", said Database Software marketing manager Chris Payne. "It has had some very flattering reviews and we will be promoting the product heavily over the next few months.

"We believe it will complement our new Mini Office Professional range for the ST and the STOS products from our sister company Mandarin".

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CDS Software (0302 321134) has acquired the licence to produce a computer version of top TV quiz show Sporting Triangles.

"We have missed a few opportunities in the past but we were determined to gain this licence. Our negotiations paid off and we are really thrilled to be the software house producing this title", said sales director Martyn Wilson.

He told Atari ST User *that development was well underway aimed for launch at the European Computer Trade Show on April 16. Price £19.99.*

Pictured (left to right) are Giles Hunter, MD CDS Software, Deborah Waight of Central TV and Martyn Wilson sales director of CDS.

ST programs at Euro Show

MORE than 30 of the latest programs for the Atari ST are having a showing at the first European Computer Trade Show.

At the Business Design Centre from April 16 to 18 are Gridrunner and Andes Attack from Llamasoft; Bio Challenge (Palace); Timescanner; Millenium 2.2 and Real Ghostbusters (Activision); Cybernoid II (Hewson); Steve Davis World Snooker and Colossus Chess X (CDS); Proflight (HiSoft); Weird Dreams and 3D Pool (Rainbird); Debut and Outland (Interceptor) together with STOS Compiler, STOS Maestro, STOS Maestro Plus and STOS Sprites from Mandarin.

On the graphics and utilities front, the show will include six packages from Electric Distribution. They are Cyber Sculpt, Cyber Texture, Cartoon Design Disc, Video Titling Design, 3D Fonts I and 3D Fonts II.

New distributor

SIGNA Publishing Systems (0252 874406) has been appointed official UK distributor for Calamus, the German DTP program for the Atari ST. Signa was aiming to launch Calamus price of £459.99.

Aim: Infinity

TEENAGERS John Thornewill and William Scales are to convert the result of two years work for use on the Atari ST.

Early in 1987, they gave themselves the target of producing a game that would stretch the capabilities of the BBC Micro. They believe they have done it with their arcade adventure Infinity and now plan to bring out an ST version.

On the Midi track with video

Technician at Goldsmith College's electronic music studio, Andy Woolford works on preparing the video

HELP is at hand for budding musicians who find it hard to struggle through complex instruction manuals in order to get to grips with computer technology.

London-based DA Associates (01-056 3787) has produced a VHS video tape designed to introduce beginners to sequencing, using the Atari 1040ST and Hybrid Arts' Midi Track system.

David Anderson of DA Associates has brought out a number of education and training programmes, but Introduction to Midi is the first for computer music. He hopes to follow it up with others in the computer field.

"Most people I speak to hate manuals. All they want to know is what buttons to press to get started, and this is what we are trying to make easier", he said.

The video, which comes with a glossary, explains the basics of working the system through to producing a simple tune.

MANNESMANN Tally (0734 788711) has developed a new printer claimed to be a breakthrough in ink jet technology the MT91. The 136 column printer uses a new ink formula and printhead mechanism for rapid drying and to stop ink clogging the head. The company is predicting the MT91 will help raise its UK share of the ink jet market to 10 per cent within 12 months. Price £795.

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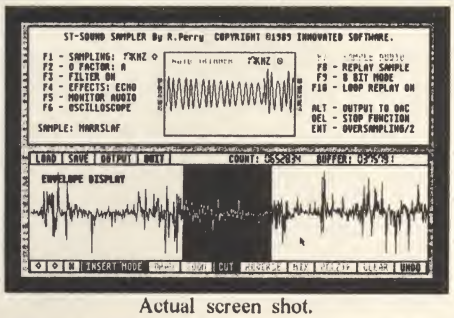

Actual screen shot.

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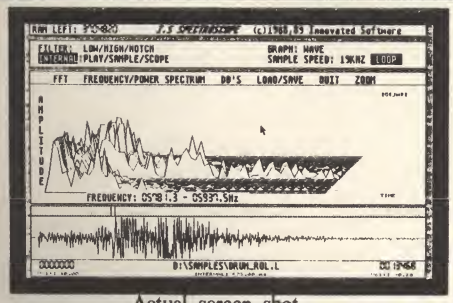

Actual screen shot.

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Gallup Software Chart

This month	Last month	Title (Software House)	Price	Month reviewed in Atari ST User	Comments	Marks from 10
1	◁ 1	FALCON *Mirrorsoft*	24.95	March 1989	Still holding its own at number one. Prepare yourself for a Mach 2 flight in an F-16 and join the military simulator enthusiasts.	9
2	●	GALDREGONS DOMAIN *Pandora*	19.99	May 1989	Enter the world of mystery and magic with the wizard Azazael, five gems and ultimate power. Read how our adventurer fared in this issue.	6
3	●	FOFT *Gremlin*	29.99	May 1989	Federation of Free Traders was a long time coming and promised to beat Elite. Does it live up to expectations? Read the review in this issue.	8
4	▽ 3	LOMBARD RAC RALLY *Mandarin*	24.95	Jan 1989	Can you win enough legs in this competition to customise your Cosworth, appear on TV and win a prize? Keep on playing and you'll get there.	9
5	▽ 2	OPERATION WOLF *Ocean*	19.95	March 1989	Another success for a Taito coin-op which has made a surprisingly good transition to the ST screen. Fun and not too demanding.	7
6	●	BARBARIAN 2 *Palace*	19.99	May 1989	Sequel time with this one from Palace. Not just additional screens, but a whole new game with a lot of nice touches and added excitement.	9
7	△ 9	DOUBLE DRAGON *Melbourne House*	19.99	–	Blast from the arcades again. Your mission is to rescue your girlfriend from a selection of nasties prowling New York streets.	–
8	▽ 7	ELITE *Firebird*	24.95	Nov 1988	This game scores most on playability and addictiveness. Now in solid 3D it is stunning – a classic in its own right.	9
9	▽ 6	BATMAN *Ocean*	19.95	April 1989	Fun to play and entertaining to watch, with many interesting locations to explore, puzzles to solve and old enemies to meet. Well worth a look.	9
10	△ 14	CRAZY CARS 2 *Titus*	19.99	April 1989	A sequel, but not a simulator. A good fun race against time and your opponents. Nice graphics and value for money.	7
11	▽ 4	THUNDERBLADE *US Gold*	19.99	April 1989	Keyboard pilots have a wide choice here, with wartorn skyscrapers, sea battles, rocky canyons and forests as the colourful backdrops.	8
12	●	BORODINO *Atari*	29.99	March 1989	History has the battle as a draw, but it was also a turning point for Napoleon. Could you alter the outcome and change the face of Europe?	–
13	▽ 5	R-TYPE *Activision*	19.99	March 1989	High in the difficulty stakes, but falling in popularity. Enjoy the beautiful graphics as you zoom across another horizontal shoot-'em-up.	8
14	▽ 11	HEROES OF THE LANCE *US Gold*	24.99	March 1989	For the AD&Ders among you this is a must. SSI and TSR have linked to bring this increasingly popular game to your screens.	9
15	▽ 12	JOAN OF ARC *US Gold*	19.99	March 1989	With the depth of gameplay and extensive options, this is one of the better strategy games on the market. Excellent value for money.	8
16	●	KINGS QUEST 4 *Sierra On-Line*	19.99	–	Should you have finished the third Quest your wait is over for the sequel. But you don't have to complete the others to enjoy this one.	–
17	▽ 8	AFTERBURNER *Activision*	19.99	March 1989	Without the moving seat and joystick to be found in the arcade version, this has little to offer which hasn't been seen often before.	7
18	●	LED STORM *US Gold*	19.99	May 1989	Back to the race track again with another arcade conversion. A vertically scrolling game, but has it anything new to offer? Read the test drive inside.	5
19	▽ 10	SPEED BALL *Mirrorsoft*	24.95	Dec 1988	Another Bitmap success. The graphic representation and animation are startling, while the backdrop is pleasant and unobtrusive.	9
20	▽ 13	HOSTAGES *Infogrames*	29.95	Jan 1989	Must be one of the most unique, highly developed and totally addictive games ever seen for the ST. Stunning graphics and sound.	10

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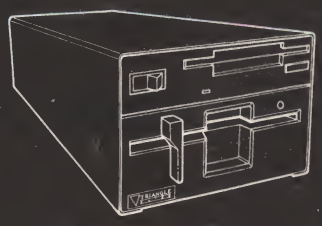

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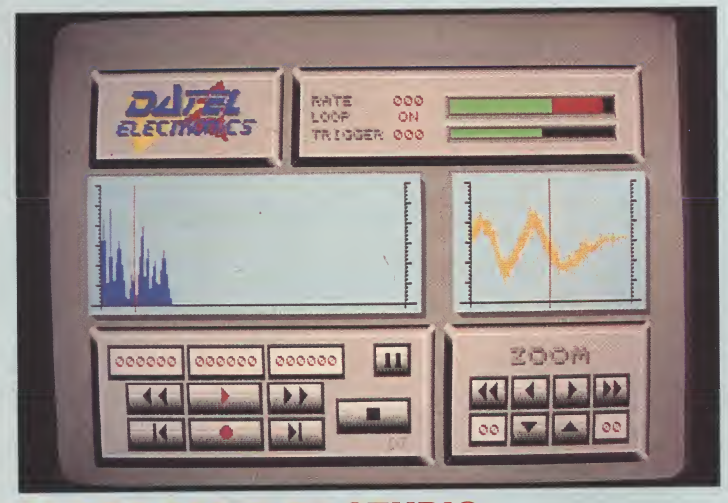

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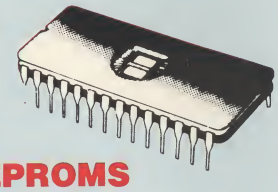

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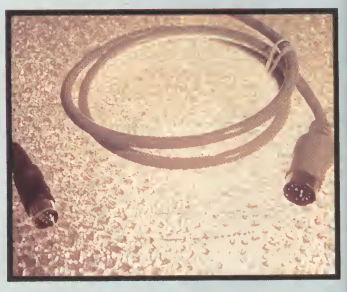

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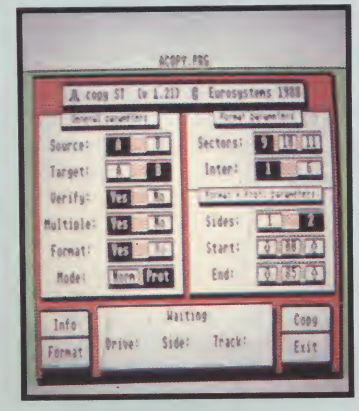

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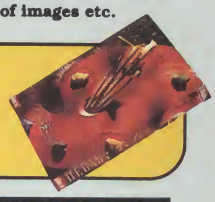

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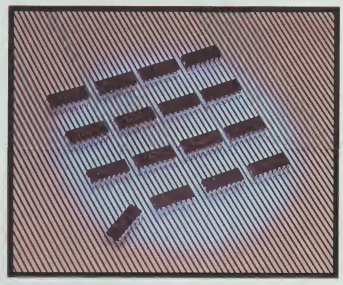

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STRETCH YO

THE Mini Office Professional suite heralds the beginning of a new era in productivity software for the Atari ST. It consists of five powerful modules which are available separately: Document Processor, Spreadsheet, Database, Presentation Graphics and Communications.

Each meticulously-designed module is simply bursting with features, and is both intuitive and quick to learn. It also makes the fullest use of the Gem environment with its pull-down menus, icons and dialogue boxes.

Mini Office Professional works with any Atari ST with one or more disc drives and a monochrome or colour display.

FULLY INTEGRATED

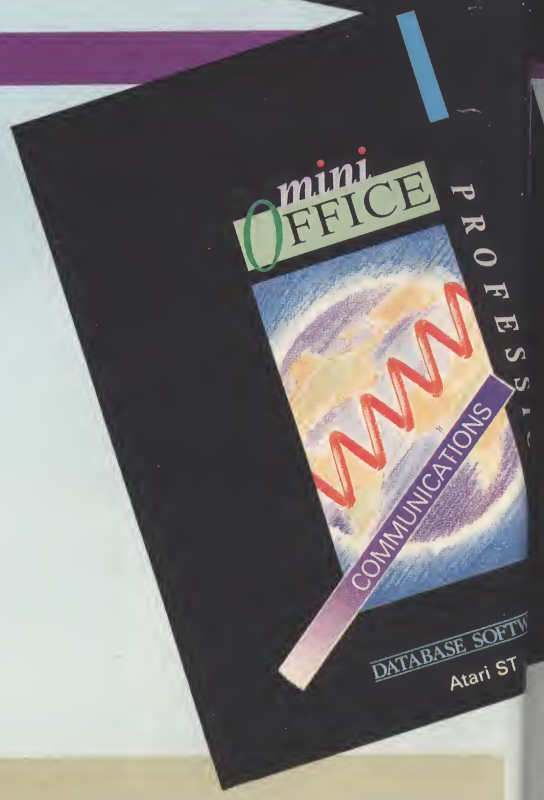
All the modules are fully integrated to maximise your efficiency – which means that you can pull graphics, spreadsheet tables and database information into the document processor – and do powerful mail merging too. You can load database files into the spreadsheet, or spreadsheet files into the database – and turn data from both into attention-grabbing charts. And any file can be sent to other micro users down your telephone line using the communications module. The opportunities are endless.

DESK ACCESSORIES

Every module comes with a set of invaluable programs which you can call up at any time. There's an all-purpose text editor, a handy memo pad, a pocket-style calculator and a set of disc utilities – enabling you to format, rename, erase, copy, show info and list directory to screen, printer or a file.

HOW MUCH?

What is even more remarkable is the PRICE – just £24.95 for each power-packed module *(Document Processor £34.95)*. Start with one module – and you'll want them all. You'll be joining more than 400,000 others who have discovered that the Mini Office range has helped to revolutionise their productivity.



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DATABASE

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RELEASE DATE: MARCH 1989

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RELEASE DATE: MARCH 1989

DOCUMENT PROCESSOR

Create multiple-column documents, wrap round graphics, multi-size text, range of typefaces, spelling checker, thesaurus...and more.

RELEASE DATE: APRIL 1989

OUR ST

SPREADSHEET

Using your Atari ST to keep your financial affairs in order is easy with the Mini Office Professional Spreadsheet. With it you'll be able to make short work of home budgets, costings and what-if calculations. And, like all the modules, it uses the powerful Gem environment.

Manipulate your data – just the way you want!

Among the features at your command:

- 255 rows by 255 columns
- Columns up to 32 characters wide
- Full relative replication of formulae
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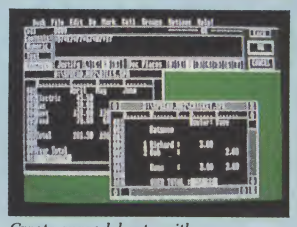
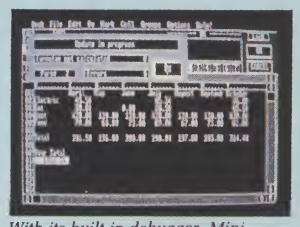
- Align text and numbers right, left or centre
- Open up to four files at once
- Sort rows or columns and create an index for future manipulation
- Search for individual text cells
- Load Ascii, DIF files and data from the other Mini Office modules
- Create executable command files using the built-in spreadsheet programming language
- List formulae to a text file, and manipulate them in the text editor
- Print extra-large spreadsheets sideways



Create spreadsheets with ease, opening up to four files at once



With its built-in debugger, Mini Office will highlight your errors

COMMUNICATIONS

Using your Atari ST to send fax, telex, telemessages and electronic mail is easy with the Mini Office Professional Communications module. With a minimum of keystrokes you can connect to MicroLink, Telecom Gold, Prestel and specialist bulletin boards all round the world.

Link your Atari ST to the outside world!

Among the features at your command:

- Select your modem from the list supplied on disc – or define your own
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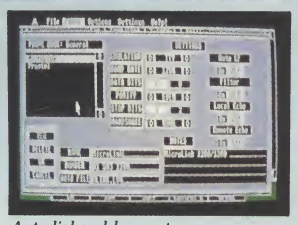

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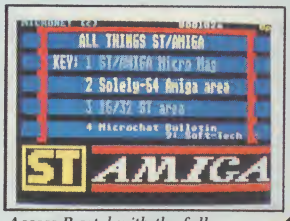

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DATABASE SOFTWARE

Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

Product: Populous
Price: £24.99
Supplier: Electronic Arts, 11-49 Station Road, Langley Business Centre, Langley, Berkshire SL3 8YN.
Tel: 0753 49442

Creating landscape at will...

Game of the

ATARI STAR USER GAME

FRUSTRATED with this dirty planet, ever wanted to play God and begin all again? Well, Electronic Arts offers you just such a chance with this outstanding new release.

Written by the Bullfrog team of Peter Molyneux, Glenn Corpes, Kevin Donkin, Andy Jones, Sean Cooper and Les Edgar, Populous stands to be undisputed game of 1989.

It is safe to say that Populous is unlike any other game you will have seen on the ST, or any other micro for that matter. It has already taken the Database offices by storm and is providing an addictive cult activity with many of our editorial staff each lunchtime.

Double disc drive owners can expect an extra surprise, as side two of the disc is filled with professionally created music to listen to at whim.

Within the game you play the role of a god in a titanic struggle between good and evil. The screen is divided into five parts and contains all the controls you'll need to impose world domination.

In the background is the Book of Worlds which shows a map of the area under conflict, while in the foreground is an elevated three dimensional plan of a chosen magnified area currently under play or scrutiny.

Command icons surround the maps and all actions are controlled by clicking with your mouse on them.

Your progress is shown by a slider on a manna bar, while specific information can be displayed on an information shield. Pictorial representation is colourful and realistic while land relief and sprite movement is fast and clean.

As a divine being you have a group of followers from whom you derive your power. The more followers you have and the greater their achievements, the more power you wield. In juxtaposition the followers of your enemy's diety are also trying to do the same.

Since there is barely enough room in the world for your own magnificence, two egocentric gods won't do. You must rid the world of the opposition and set up your kingdom here on Earth.

To do this, you will use your great power to move the earth and your devout followers to crush the misguided. However, you can act only indirectly as persuasion is the key to your people's increased faith in your deity and your consequential manna score.

As a god you are able to create and destroy land, sea and rock at will. You can coax your inhabitants to populate this landscape and build villages, towns and fortified castles. In fact at its peak the game can cater for 300 settlements on either side. The gameplay backdrops can be of a desert, grassland, tundra or mountainous type.

As your manna score increases you can call upon all kinds of natural phenomena to help your followers or thwart the machinations of your adversary. These natural occurrences can be a choice of volcanic eruptions, earthquakes, swamps, floods and even the ultimate apocalypse – Armageddon.

Your people are either walkers – who gather, settle, procreate and multiply – or a leader who acts as a high priest and is your intermediary with all others.

You can also create warrior knights who as free spirits rampage across your enemy's heartlands killing his followers and burning their buildings.

Populous gives an number of starting options, which include a superb tutorial game to allow you to get the feel of things and give you confidence by winning a few global battles.

The main conquest option consists of more than 500 fixed worlds, with each world getting progressively harder to conquer.

When you play in conquest mode, you're always the good supreme being – you can choose to be good or evil in other games. Before you enter each world, you'll get a briefing on the world's landscape, your enemy, and other helpful game information.

You'll start on Genesis, and once you have defeated the opposition you're given the name of a more challenging world.

The next world you go to depends on the final score in your previous

...goes with the job

gods

game. The higher it is, the more difficult a world you're given to match your skills. You must wipe out all your opponent's followers in one world before you are allowed to progress to another.

A custom option allows you to modify 60 or so of the game's parameters and, if you like, use a paint map option to design your own worlds.

Tactics and strategy are important and it will take several hours play for you to develop your own strategy for victory. The manual gives several tips for survival and conquest and also provides more than 30 detailed answers to questions you may ask yourself as you play.

You can play the game against your ST or against a human adversary on another ST or even an Amiga. This can be achieved via a null modem cable in datalink mode or by connecting to a remote player via modems in voice mode.

These inter-micro games of Populous are very fast and exciting and add the variety that only another human can bring.

I can't think of any other game which has grabbed me as hard as Populous. It has everything and I find it very hard to think of any criticism of the product. Without hesitation I say: Go out and buy it now, you won't be disappointed.

Nic Outterside

Sound	*10*
Graphics	*10*
Playability	*10*
Value for money	*10*
Overall	*10*

SECOND Sight

On the seventh day I rested... and I needed to! After six days almost constant play with Populous I was suffering from severe eyestrain and had forgotten what my bed looked like.

I have never come across a computer game with such addictive quality and such superb playability. Populous leaves all others in its wake, and I suggest you buy now before all stocks are exhausted.

Jayne West

Slow motion escape

Product: Prison
Price: £19.95
Supplier: Chrysalis, Unit 2, Willis Croft, Downs Row, Moorgate, Rotherham S6 2HD.
Tel: 0709 370102

PRISON is an arcade adventure game from a relatively new software company, Chrysalis. In it you play the part of Jag, an undercover cop who has been framed for a crime he didn't commit and sent to the prison planet Altrax from which there is no escape. Or is there?

Two years previously a pleasure craft crashed on to the planet's surface. The ship was wrecked, but no trace was found of the one-man escape pod. Your objective is to find this pod and escape from Altrax. The game loads to depict the sun rising over an alien landscape. You are transported to the planet and appear in the distance. The game then switches to the main playing screen.

A band across the top of the screen called the message tube presents information to you after executing certain actions. About half the screen is taken up by a window in which the action takes place, the bottom part being the status area showing what you are carrying, your score, escape pod status, time and so on.

The action is presented sideways. You can walk left or right and into and out of the screen providing there is a doorway. The immediate area is like a maze with one section looking pretty much like the next. As you walk off the edge of the screen or through a doorway the next screen flicks up – there's no scrolling.

Pressing the fire button and pushing forward on the joystick activates the menu system. The options available depend on the current location and what you are carrying. Your immediate requirement is to search every location for any useful object.

You'll find a plastic card pretty close to the start location, and if you travel far enough you'll come across a locked pair of doors. Insert the card to open them by choosing the appropriate option from the menu.

On the second level an alien bars the way. You have four fighting moves at your disposal and a few well timed kicks will send it packing.

I haven't progressed too far with this arcade adventure, but on later levels you'll find hidden mines and acid pools to negotiate and more alien convicts to battle with. Stooges are outcasts, and their help may be enlisted.

The graphics are superb and the animation of Jag himself is excellent. There are simple sound effects and a nice tune playing on the opening screen. The action is slow at first with little to do but wander from location to location searching for objects. As you progress things become slightly more interesting.

Prison is an interesting game with some excellent features, but I found the early game play too slow to arouse my interest in progressing further.

Roland Waddilove

Sound	*7*
Graphics	*10*
Playability	*7*
Value for money	*8*
Overall	*8*

SECOND Sight

Despite the colourful and well drawn graphics I found Prison rather dull – nothing to do but find one plastic card on the first level. Fighting moves are available but seemingly few opponents on which to test them. Definitely a case of try before you buy.

Janice Murray

Product: Barbarian II
Price: £19.99
Supplier: Palace, The Old Forge, 7 Caledonian Road, London N1 9DX.
Tel: 01-278 0751

BARBARIAN·II

Hack on regardless

THE original Barbarian from Palace was a smash hit in 1988 with its exciting hand-to-hand combat, superb graphics and digitised grunts, groans and clanging of sword against sword. Two features made it stand out from the crowd: The scantily clad Maria Whitaker on the box and adverts – though nothing was said of the equally scantily clad male – and the graphic depiction of the unfortunate warriors being decapitated.

In the sequel, Barbarian II, both features are retained.

Boot up the first of the three discs and you'll be presented with a picture of a dungeon with two warriors standing either side of a burning brazier. A superb digitised voice clearly says "Welcome to the dungeon of Drax. Choose your warrior".

This screen heralds the first of the changes from the original game – you can choose to be either the barbarian of the title or the Princess Mariana. I tried both, but couldn't distinguish any difference in combat ability.

After choosing your warrior, disc two is inserted to load the first level of the game. The action takes place in the middle of the screen while a large Barbarian II banner occupies the top quarter and an information strip the lower. In this a sword on top of a shield always points north and a scroll shows the current level plus your score.

Each of the first three levels consists of around 28 screens and you can walk left, right or through a cave to the next location. There's no scrolling, and each new screen flicks up fairly rapidly. The first level is the wastelands, the second is the caverns and the third the dungeon.

The object is to make your way to a certain location on one of the screens. Your first problem is to hack and slash your way through the various monsters which inhabit each screen. These include dinosaurs, furry two legged beasts, cavemen, chickens and other creatures which defy description.

Apart from the monsters, the other main obstacle is the way the screens are mapped. For instance, if you walk left off one screen you can either appear on the right of the next or at the mouth of a cave also on the right. In the heat of the battle it's very easy to become confused about which way you are facing. The sword-compass always shows which direction is north.

Objects when collected will help you seek out and destroy Drax. An axe increases your strength, a globe guards against Drax's magic, a potion increases your strength, a shield guards against the demon's fiery breath and so on.

The number of fighting moves has been reduced to four and I found that just one or two were required to kill opponents. The hard part is finding the right location to take you to the next level and the fighting takes up a smaller proportion of the action.

The graphics and animation are excellent – and the gory decapitation scene is still here. The digitised sound effects add to the atmosphere and the whole game is professionally produced.

Barbarian II is an excellent sequel to the original hack and slash cut-'em-up combat game as this version has more depth, better graphics and improved sound. If you liked Barbarian you'll like this too.

Roland Waddilove

Hack and slash your way to success

A bit below the belt!

Sound	9
Graphics	9
Playability	9
Value for money	9
Overall	9

SECOND Sight

I was disappointed by Barbarian II's lack of fighting manoeuvres – that's what made the original so good. However, I welcome the new exploring and mapping aspect, plus the collectable objects, ar.d these features add more depth to gameplay.

If you're on the lookout for a new combat challenge Barbarian II should fit the bill quite nicely.

Janice Murray

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Elite still reigns

Product: Federation of Free Traders
Price: £29.99
Supplier: Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.
Tel: 0742 753423

THE scene was set five light years ago with the release of the pioneer space trading game Elite with an impressive standard for all imitators to attain.

Variations on the theme followed in the form of the excellent Starglider and Starglider 2, the superb Captain Blood and now the much vaunted Federation of Free Traders.

The sales pitch has been that FOFT would take Elite into the next generation and its release I have awaited with baited breath.

The program comes on two single sided discs with accompanying audio soundtrack cassette. It is packaged in a sturdy and colourful box with 74 page instruction manual, Quick Start reference card and a colourful poster sized guide to the space craft you are likely to meet.

The first thing that will strike you is the complex and non-sequential instruction manual which gives you no immediate indication as to how to start playing FOFT. So an in-depth perusal of the manual and Quick Start card is an essential prerequisite to play. Even then, smooth entry into the game cannot be guaranteed.

As with Elite, you adopt the role of a cadet pilot manning your father's trusty old space cruiser – in this case a Hartley MkII – as you trade your way across the galaxies seeking interstellar wealth and glory.

The game boots up with a bright and stunning loading screen which gives way after some two minutes to a scrolling credit and introductory screen, backed with haunting music by Benn Daglish.

In fact the second disc is cram packed with 20 pieces of musical accompaniment from which you can choose by pressing the Help button. They range from Vivaldi's Rites of Spring to Khatchaturian's Sabre Dance. Relax as you are flying through the galaxy to the refrains of Tchaikovsky's Dying Swan.

You are now presented with the control screen of the game, from where all actions eminate.

Your key to communication and knowledge is through the Galnet system – a sort of space age emulation of MicroLink – which provides you with valuable data and enables you to transmit and receive messages.

The Galnet will also give you information concerning your first and subsequent missions, your first being a simple escort job between two solar systems.

Trading takes on a similar role to that in Elite, but market prices fluctuate more quickly and selection of buying and selling of items is more laborious with fiddly and fancy trappings to overcome.

I suggest that when you first log into Galnet you select E for commodities and then select I for metals. If the price of silver is less than 45 buy as much as you can and begin trading on the same planet, as prices fluctuate. This is a piece of cake and should enable you to build up some capital before starting the game in earnest.

Also in Elite style, your weapons and hardware system can be upgraded as you amount more credits, with such things as plasma lasers, missiles, photon and star drives.

Navigation, flight and battle in general are very awkward and slow compared to Elite, with poor, sluggish animation – this despite overall better solid vector graphics in FOFT.

Navigation planning is made via a navigation computer which allows you to magnify a planetary system by up to seven times then select and hyperspace to the chosen system.

Two interesting and novel implementations are the damage to ship control and the in-flight computer. You can specify areas of damage to be repaired by your on-board droids and can have fun playing with your in-built computer.

However, despite these additions, Federation of Free Traders owes too much to its Elite mentor, is difficult to get into, unfriendly, slow and in the final analysis rather tedious.

I'll give it good marks for programming and implementation, but I am disappointed.

Nic Outterside

Sound	9
Graphics	8
Playability	7
Value for money	7
Overall	8

SECOND Sight

After all the pre-release advertising hype that FOFT would take Elite into the next generation, my impressions of this game can be summed up in one word: Disappointment.

Federation of Free Traders is interesting and novel in many ways, but is clumsy in operation, painfully slow and at the end of the day is nothing more than a poor cousin to the Firebird classic.

Jayne West

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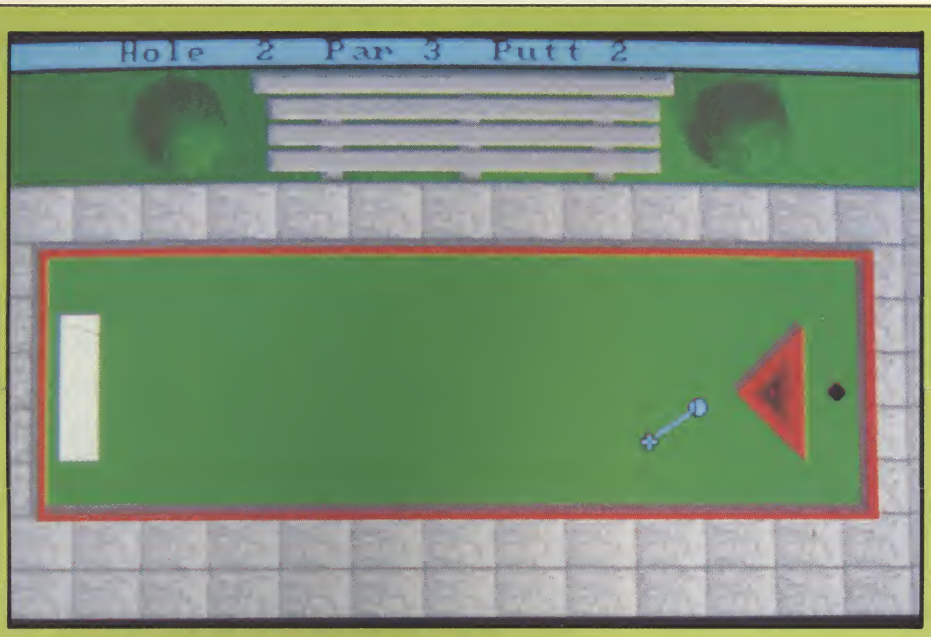
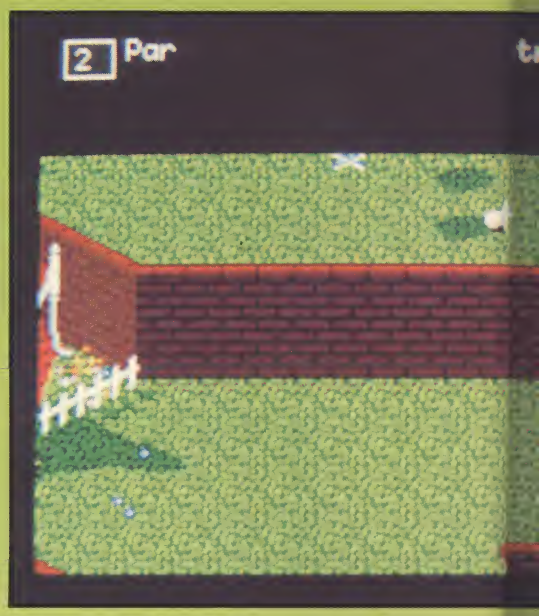


Mini Golf: Tests your ability to judge distance, speed and angles



Zany Golf: What a set of crazy, colourful obstacles

Product: Mini Golf
Price: £19.99
Supplier: Magic Bytes, Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.
Tel: 0742 753423

Product: Zany Golf
Price: £24.95
Supplier: Electronic Arts, 11-49 Station Road, Langley, Berkshire SL3 8YN.
Tel: 0753 49442

Time for a quick round

MINI Golf from Magic Bytes and Zany Golf from Electronic Arts are simulations for up to four players that bring that much-loved summer pastime, Crazy Golf, into your living room.

The object of Mini Golf is to tackle a series of 36 wacky holes designed to test your ability to judge distance, speed and angles. It comes on two discs, the first a beginner's course to prepare you for the more difficult holes on disc two.

To add interest and difficulty, some holes have slopes and contours. The ball acts realistically by slowing down, speeding up or being diverted from its natural path. There are also tunnels, hollow logs, sand pits and teleports to add an unpredictable element.

Each hole is displayed as a plan view. You place the ball anywhere on the tee then stretch an elastic line in the chosen direction – the longer the line the harder your stroke. Whack the ball and it will hopefully bounce its merry way into the cup.

At the top of the screen is an information bar which displays the hole, par and your number of putts. You're only allowed a certain number of putts per hole – too many and the hole's over. Options include retry your last shot, replay last shot – like a video recording – show the score card and display contours side on.

The well drawn graphics add to the atmosphere – dotted outside the playing area are bushes, benches, hotdog stands, flowing streams, rippling ponds and so on.

The courses are cleverly planned and thought out. The beginner's course is fairly easy and after one round you will probably know how to reduce your score next time. You can't use disc two until you complete the beginner's course below par.

Zany Golf presents a different interpretation of the game providing only nine holes on two discs – but what a set of crazy, colourful obstacles. Here your aim is to complete each hole in par or under.

Your score carries over to the next hole, so any shots saved can be used.

But go over par in total and that's the end of the game. There's a special reward if you can finish all nine holes, but I haven't managed it yet.

Each hole loads in from disc and you get a beautifully drawn loading screen and a preview of the next hole. Sometimes there's a helpful hint on how to succeed.

The holes are so large that you only see a small part of the playing area. To view more you have to scroll the screen by moving the mouse. To tee off you position your ball on one of three spots then stretch a line of dots behind the ball pointing in the direction you wish to go. The longer the line, the further the ball will travel.

At random you are given the opportunity to gain extra strokes. You can do this by hitting a fairy sat on the course or by finishing the hole within a time limit. There are four bonus strokes to be gained using the latter, but the longer you take to finish the less you'll get.

Each hole is based on its name. For instance, Hamburger has a bouncing McDonalds' Quarter Pounder sitting on top of the hole and a ketchup bottle on your line to it. Some of the holes are arcade games in their own right – there's even one that's a pin ball table.

The graphics are outstanding, especially the small title screens preceding each hole. The animation is superb and the 3D slopes give a realistic appearance of gravity.

Both Zany and Mini golf are fun, especially when two or more people are playing. The main problem is that I soon mastered and completed all Mini Golf's holes because they are always the same. Once the angles are worked out there is little

challenge left.

Zany Golf's holes are a lot more difficult to complete. Even so, I feel the novelty would soon wear off due to continuous repetition. There should have been more holes to provide variety.

There's a case for having both games because they are so different, but if I was forced to choose I would have to go for Zany Golf. Nine screens isn't an awful lot for your money, but the graphics make up for that.

David McLachlan

Mini Golf	
Sound	6
Graphics	7
Playability	9
Value for money	8
Overall	7

Zany Golf	
Sound	8
Graphics	9
Playability	9
Value for money	9
Overall	8

SECOND Sight

These two golf games had everyone crowding round the ST when they were first booted up. Initially they are fun, challenging and addictive. However, because they lack variety interest soon wanes, so don't expect to be playing them a month later.

Roland Waddilove

Going batty

Program: Titan
Price: £19.95
Supplier: Entertainment International Ltd., Unit 4, Stannets, Laindon North Trade Centre, Basildon, Essex SS15 6DJ.
Tel: 0268 541126

THE year is 2114 and the place is Vegapolis. The game, Titan from Entertainment International. Devised by leisure genius Professor Hybris, Titan has attracted, and beaten, adventurers from all over the globe. Now it's your turn. Your joystick moves a magnetic racket which you use to control a ball bouncing round a maze shown in plan view. 80 screens each contain a variety of bricks and your mission is to complete all 80 levels by either eliminating the bricks or by hitting the exit brick with the ball.

Of course it's not quite as easy as it sounds. There are deadly skulls scattered about which can cost you lives – you start with nine, and you'll need every one. There are also coloured passages which the racket can traverse, but which the ball cannot and vice versa.

Some bricks are solid and indestructible and you can move them around the screen with your racket to block entrances to skull land. Oil slick bricks make your racket uncontrollable while other bricks allow you to pass through them a certain number of times and then they solidify.

If you move on to the Energiser brick, the positions of the racket and ball are swapped – useful for getting out from behind wrong-coloured bricks.

The first few screens are easy enough and obstacles are gradually introduced as the game progresses. Things really start to get tricky on level 11. Getting the ball to go where you want it takes a little practise, especially moving it just half a square. You can capture it if you're quick by moving on to it and pressing the fire button.

The action takes place in an area larger than the monitor screen, but a radar shows the full picture. It doesn't indicate the position of the bricks, unfortunately.

There doesn't appear to be a pause facility, although as there is no time limit this is not too critical and you can pause the game by capturing the ball. The action can be fast and furious, but you can plan your course of action at your leisure.

When you're dead you can start again from the last level, but alas, when you boot the game you start again at level one – there's no password.

Titan is easy to play, but difficult to master. Unless you're a real bat and ball fanatic I reckon 80 screens of this will drive you bananas.

Ian Waugh

Sound	5
Graphics	7
Playability	6
Value for money	6
Overall	6

SECOND Sight

Titan's fast four-way scrolling and hectic game play made me dizzy at first. Controlling the ball is difficult and the screens are quite challenging – easy at first, but they soon become difficult. I would have liked to be able to start on any screen though.

Roland Waddilove

PERSONAL NIGHTMARE

There's something very strange going on. It's as if you are living through your worst nightmare and unable to wake up. Won't anyone let you in on the terrible secret that haunts your waking moments.

Personal Nightmare is the new brain child of HORROR SOFT. A new kind of icon-driven, animated game that has been written using the new especially developed Agos language.

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Bismarck

sails again

Product: Bismark
Price: £24.95
Supplier: Mirrorsoft, 118 Southwark Street, London SE1 0SW.
Tel: 01-928 1454

ARE you gripped by the urge to take to the briny, clench your teeth around a smoking pipe and stare resolutely through the lashing rain every time you watch The Cruel Sea? Me neither, but I am tempted to indulge in a little seafaring adventure from the comfort of my own ST.

Bismarck is the latest in a long line of not so serious simulations from PSS. It recreates those fateful days which saw the destruction of HMS Hood with the loss of 1,412 lives, and the eventual sinking of the Bismark with the loss of around 2,190 men.

You can take on the role of commander of the British forces and order the hunting ships around, or take the part of Admiral Lutjens and try to take the Bismark to the safety of the South Atlantic or the port of Brest.

You can also play out a number of specific conflict scenarios, but I would only recommend them if you need the gunnery practice or you've completed the main game. Other options allow for three game speeds and three difficulty levels, all of which are difficult until you've had some practice.

It's at this point that you notice the strange control system used by the game. You can use either mouse or joystick control. The latter is by far the more responsive, but on occasions you need to use the left mouse button – the joystick fire button simulates the right button – to exit from certain functions.

The action takes place over a map of Europe and the North Atlantic. Various icons represent convoy ships and warships. An aeroplane search from the UK can be called up and will reveal the German battleship.

A weather icon produces clouds that drift across the screen as the met office tries to predict the weather. Over at the Admiralty the odd message lights up the screen.

Movement is very easy, consisting of clicking on a ship and then clicking again at the point to which you want it to sail, but as you can't see the Bismark to start with it's a problem knowing where to head for. When two ships do get close then it's battle stations and your chance to become a gunnery officer.

Finding the other ship is difficult, as it is often just a hazy blob on the murky horizon. On one occasion I rejoiced in the fact that I'd cornered the Bismark and sank five shells into her. Then I realised I'd been hammering one of my own ships. Oops, sorry boys.

While popping off shells from the one deck gun under your command you also have to man the damage control team. This consists of a deck plan and a flashing cursor. Point at a location and watch the cursor race towards it extinguishing any fires along the way.

The only other arcade section of Bismark is where you launch planes from a carrier and fly them on a rather dangerous torpedo mission. The action is 3D, but it's hard to judge when to drop the fish. As long as you keep dodging you are unlikely to be shot down – unless playing the hardest level – but ditching in the sea is an ever-present hazard.

And so the hunt continues, with the British trying to find and nail the Bismark and the Germans knocking off any innocent shipping on its way to the South Atlantic.

While this is not a particularly serious simulation it is rather complex. My only reservations are whether it has long term playability. This should be helped by the many game options and practice scenarios available, but I think interest will only last until you have successfully completed the mission on both sides.

Bismarck is reasonably well done, but isn't anything special. The sound effects are a little disappointing as I was hoping for sampled engine noises as well as other special effects.

With an interesting mixture of strategy and fun filled arcade sequences Bismarck is a lightweight, but nevertheless entertaining way of recreating those old John Mills war films without ever suffering all that heaving around.

Duncan Evans

Sound	5
Graphics	7
Playability	8
Value for money	7
Overall	8

SECOND Sight

I quite enjoyed this seafaring strategy game interspersed with arcade sequences. It won't appeal to the fast-action arcade fanatic, but those who prefer to sit back and think carefully about their next move will find Bismark interesting.

Roland Waddilove

Fun down below

Product: Operation Neptune
Price: £24.95
Supplier: Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.
Tel: 01-364 0123

THE French always seem to come up with something new and original with each release. Operation Neptune from Infogrames continues the tradition with an underwater escapade that's like a breath of fresh air among some of the stale Engish titles.

You take the part of Bob Morane – a sort of Rambo, or perhaps, James Bond type of trouble shooter. Your old enemy, the Yellow Shadow, has been up to his dirty tricks again.

The underwater bases he is rapidly constructing are designed to build a series of killer robots which will be unleashed on the world to wreak havoc. When the people have been crushed and demoralised they will be unable to resist their new dictator, Mr Ming, the Yellow Shadow himself.

The world's secret services enlist your help to overcome this threat and the game starts with you being parachuted into the sea near Ming's underwater sea bases.

The game features several different arcade sections and there's also a certain amount of strategy involved to keep the old grey matter in trim. The first of these sections involves racing over the waves on a jet bike. An enemy agent soon makes an appearance and you must ram him and kick him off. The action is seen from the front and your controls are left, right and kick.

After sending Ming's agent to a watery grave you enter your mini attack submarine. The display changes to a 3D view out of the front observation port with various controls surrounding the window.

You can accelerate, brake and steer to starboard or port with the mouse or joystick. First, however, it's best to consult the map which is brought up by pointing and clicking on the appropriate control on the panel below the window.

A full screen map is drawn showing your position, Ming's bases, the energy supply lines connecting them and his undersea guard patrols. Pointing and clicking at an object brings up an information box showing what it is, its strength and so on.

Friendly bases will tell you what supplies are available should you need them, and you'll need to dock there several times during the course of the game in order to stock up with mines, fuel and oxygen.

To destroy an enemy base you must locate the repeaters in the energy supply lines connecting it to the other bases and mine them. Using the map you can pinpoint an energy repeater and either navigate to it manually by flicking back to the 3D submarine mode or by setting the automatic pilot.

The disadvantage of manual operation is that you must steer round or blast the rocks and mines. The automatic pilot will navigate round these, but won't take the most direct route wasting time and fuel.

When you get to the repeater you can point and click at the control to drop a time bomb and set the timer. Unfortunately, this method isn't too accurate, as water currents may move it. The best way is to don your wetsuit and take it by hand.

Clicking on the frogman control shows you walking towards the airlock complete with wetsuit on, stepping in then dropping out of the bottom of the sub. The screen changes to an exterior view of the sub just above the sea bed. Swimming right you soon come across the repeater. After dropping a mine you head back to the sub.

Naturally, it's not that simple, and guard patrols soon track you down and attempt to impale you on the end of spears. Watch out for Jaws as he makes his hungry appearance.

When a base is destroyed a shadowy Ming's face appears on the screen. The more bases you destroy the clearer his face becomes.

While you're busy disrupting energy lines Ming is constructing new bases and establishing more lines. The harder the difficulty level selected at the start of the game, the faster he builds them.

As you approach each base its guards will launch an attack. You can drop electronic decoys to put them off your scent, or you can choose to battle it out by donning your wetsuit and jumping aboard your undersea scooter. Scooter battles are in 3D with the viewpoint just behind yourself swimming into the screen.

The quality of the graphics is excellent, the sound is good and the gameplay is quite varied. After a few confusing moments getting to grips with the game I found it quite addictive – a sort of underwater Elite or Starglider.

The only criticism I can make is that there aren't any points to be won. You either succeed or fail in your mission to destroy Ming. That aside, it is a superb game.

Roland Waddilove

Sound	*9*
Graphics	*10*
Playability	*10*
Value for money	*9*
Overall	*9*

SECOND Sight

Operation Neptune is another winner from across the Channel. Several different sub-games come together to make a highly entertaining piece of software.

Each game can last anything from 15 minutes to an hour or more depending on the difficulty level so I would have liked to see a save game facility. However, I can still thoroughly recommend it.

Janice Murray

Home in on Dr Ming to save the world

The controls of your mini sub

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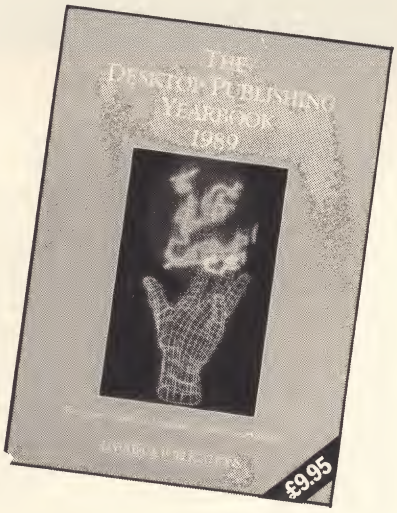

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AES	35.6	—	—	103	—	—
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Scroll on as before

Product: Thunderwing
Price: £19.95
Supplier: Artronic, 1-3 Haywra Crescent, Harrogate HG1 5BG.
Tel: 0423 525325

JUST when you thought it was safe to go for a scroll, Thunderwing from Artronic is here. The question is, just how many vertically scrolling shoot-'em-ups does the world need? Fine, if each new one is an advance on the previous standard. Pity that Thunderwing is something of a step sideways, if not backwards.

You are the rebel leader charged with stealing the Thunderwing, the latest urban fighter. Your mission is to escape from the city and free your people.

The game features an infinite number of levels, some of them quite different. The difficulty increases as you play, so it looks like an impossible mission – you are never going to get out of that city.

Various attack waves stream in from all sides on a reduced width vertically scrolling screen. There are moving ground-based tanks, large armoured cars and fixed defence emplacements that require a number of hits to destroy.

If you shoot down a red attack wave an F icon floats across the screen. Collect this and your firepower is tripled. Destroying other waves bring extra life and Disruptor icons. You get three Disruptors and when you activate one a stream of blobs circle around your fighter at high speed destroying anything they touch.

I like shoot-'em-ups and I don't need much of an excuse to down tools and start blasting, but Thunderwing lacks that spark of originality that makes a game interesting.

The graphics are reasonable but not impressive, and the sound effects are OK but not spectacular. It is reasonably challenging on the later levels, but I was disappointed to find it much the same as any other vertical scroller.

Duncan Evans

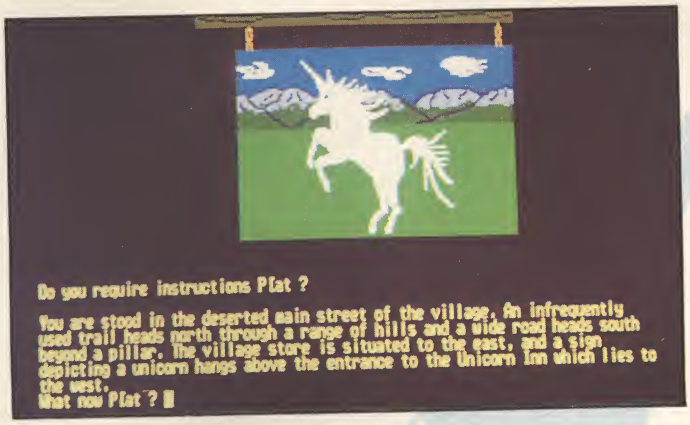
Sound	6
Graphics	7
Playability	8
Value for money	6
Overall	7

SECOND Sight

In this vertically scrolling shoot-'em-up you control a fighter plane flying over a city blasting the local inhabitants to smithereens. Sounds familiar? You bet. I've played half a dozen similar games in as many months. Software houses: Can we have something a bit different please?

Roland Waddilove

Adventure survives its plot



Program: Blackscar Mountain
Price: £14.95
Supplier: Titan Games, 45 Windmill Lane, Worksop, Nottinghamshire S80 2SQ.
Tel: 0909 483017

WE are now beginning to see some of the first fruits of Incentive's excellent adventure generation program, STAC, a package being increasingly used by authors to produce commercially marketable home-grown adventures. One such game is Blackscar Mountain from Titan Games.

The rather jaded plot is yet another of those wicked wizard and malign minions versus bold adventurer stories. To compensate, the author has a good eye for detail and manages to whip up an atmospheric tale.

Blackscar Mountain broods over the kingdom of Zamara and was so named because it was rent in two by a huge chasm.

This phenomenon had been brought about by an insane wizard meddling with forbidden forces. The results left him a mindless zombie and the mountain badly scarred. Evil forces now inhabit the mountain and are forever visiting their malevolence on the surrounding area. It is believed that the finding and destruction of a lost crystal skull would free the world once and for all.

All the instructions and background are built into this text and graphics adventure. The game accepts the usual verb-noun form of input, but more complex commands are possible and multiple orders can be given by the use of And, Then, All and It.

An invaluable ram save and load feature is included, the graphics can be toggled on and off, an Oops command lets you backstep and there is a choice of 40 or 80 column text mode. There are 412 points to be scored in Blackscar Mountain, many of which can be earned by solving puzzles.

You begin in the main street with 45 crowns. Check out the pillar to the south. A nearby shop has a number of items for sale, including an axe, mallet, nails, lantern, book and shield, but your initial cash isn't enough to buy them all.

The landlord of the tavern across the street doesn't object when you make off with some of his furnishings. A weary warrior supping ale has something to sell, but you're unlikely to be able to meet the price. The landlord has something cheaper on offer.

A search of a graveyard pays dividends, though you might wonder what you can do with what you find there. Not far away, you'll meet with the first challenges – how to open a coffin without getting your neck chewed up and how to find a password that will allow you past a pair of orcs.

There are about 87 locations, some of which are illustrated. The graphics are smallish and simple and some are used more than once but the text is well-written and fairly meaty. I haven't made much progress, mainly due to the difficult puzzles.

Blackscar Mountain looks to be good fare despite the familiar plot, and although the asking price seems a shade high, it is worth trying.

Bob Chappell

Presentation	8
Atmosphere	7
Puzzlement	6
Value for money	6
Overall	7

SECOND Sight

Blackscar Mountain isn't quite budget priced, but is still fairly cheap. It's a fair attempt at the traditional adventure scenario using the STAC adventure creator. The text is atmospheric and the puzzles are sometimes tough.

Roland Waddilove

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Go better on a budget

Product: Go-Moku/Renju
Price: £24.95
Supplier: Atari, Unit 3-7, Baileygate Industrial Estate, Pontefract, West Yorkshire.
Tel 0977 797777

GO was invented in China more than 3,000 years ago and taken to Japan in the seventh century AD. Samurai warriors played it to while away the time between battles. Go-Moku from Atari is a variation on the original game and is much simpler to play. The basic idea is to place five stones in a row without being blocked by the other player. Due to the inherent advantage of playing black and therefore making the first move, Go-Renju provides a further variation which restricts some moves for black.

You can play either version head to head with another player, the computer against itself or one player against the computer. The program also has a library of opening moves which it can invoke at will depending upon the skill level in operation.

Several options are available such as Advise Move which asks the computer to act accordingly. Also available is an option to step backwards through previous moves enabling you to check and record various plays.

Both game variations have 10 different levels of play from rank beginner to expert. The board size can also be selected for Go-Moku.

An option is also available which shows the various moves considered by the ST before it plays a stone. This is of limited value as its speed of thought often causes rapid flashing on the screen which is too fast to follow. However, you can interrupt the ST during thinking and force the best move found so far.

The book openings available to the computer can be viewed and any particularly uncomfortable offerings disabled. However, this feature is not available in the easier game of Go-Moku.

All options are available from the menu and pressing the Help key shows alternative keyboard commands. I was extremely disappointed with the graphic presentation, consisting of a simple black and white display which, although functional, is unattractive and reminiscent of PD offerings.

Why on earth couldn't a little splash of colour have been included? Even giving the board a traditional wooden appearance would enhance the product considerably.

Go-Moku/Renju is a prime example of a game which translates well on to the computer. What a pity Atari couldn't be bothered spending some time thinking about visual attraction. I was also disappointed to find that the traditional game of Go was not included although that together with Backgammon and Bridge are available separately.

While the game is fun to play, easy to learn, but frustratingly difficult to win, it is not worth a £25 price tag, I'd like to see it on a budget label.

Pat Winstanley

SECOND Sight

Go-Moku/Renju is a well written conversion of an ancient board game. The wide variety of skill levels makes it challenging to all abilities. My only criticisms are that it is overpriced and little effort has been put into the graphics. Apart from that, it's fine.

Roland Waddilove

Sound	*n/a*
Graphics	*4*
Playability	*7*
Value for money	*4*
Overall	*5*

Not so hot rod

Product: LED Storm
Price: £19.99
Supplier: US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-356 3388

LED STORM from US Gold is a highly competitive race game featuring non-stop high speed action from beginning to end – or so the publicity handout I received with the game proclaimed. Unfortunately, as is so often the case, the product didn't quite live up to the hype.

LED Storm is a conversion of yet another arcade car chase game, but one which seems to have very little of the appeal or sophistication of the current trend for real-time 3D graphics.

Instead the left hand portion of the screen shows a simple overhead view of the car's progress on a vertically scrolling background, while the right hand portion is taken up with a couple of speed and energy gauges – the latter seems to deplete alarmingly quickly.

Your car's speed and direction are controlled by moving the joystick left, right, forward or backward, and fire operates a kind of turbo boost which enables the car to fly over small obstacles or gaps in the road. You can also use this facility to jump up and grab floating energy tablets without which you will very soon run out of power.

The aim of the game is to get from the start to the finish on each of nine progressively harder stages through various terrains and with assorted obstacles and dangers in your path. Obstacles vary from level to level, but apart from the vehicles, grease and oil spillage on the roads you'll find some more unusual types such as dinosaur bones and frogs which attach to the rear of your car and prevent you from jumping.

You must also watch out for signposts indicating the correct route, and be ready to jump into the air to clear breaks in the road. You have no weaponry at all which makes something of a change and also makes the game rather tricky on some of the later levels.

The game lacks any real degree of addictiveness. You move your car about, you avoid the things you should avoid – and very often you also end up avoiding the things you should be collecting – but that's about it. There's no real thrill or enticement to play again, and I found I quickly tired of the regularity of my own destruction. Even the sound effects were dull.

On the whole not overly recommended unless you want a fairly tame car race game to while away a few quiet minutes one evening. Perhaps a good contender for a budget title, but a little too expensive for my taste at £19.99.

André Willey

SECOND Sight

Another vertical scroller – yawn. I do enjoy a good car racing game, but this didn't really fire my imagination or grab my attention. It's an OK sort of game, but nothing special. I'd suggest trying it before buying.

Janice Murray

Sound	*4*
Graphics	*6*
Playability	*5*
Value for money	*4*
Overall	*5*

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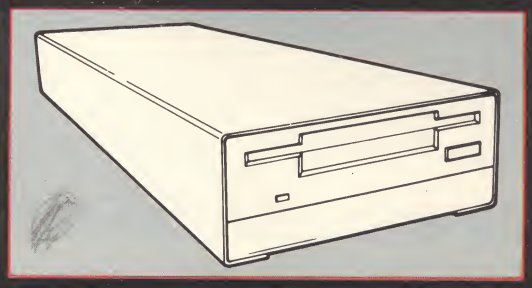

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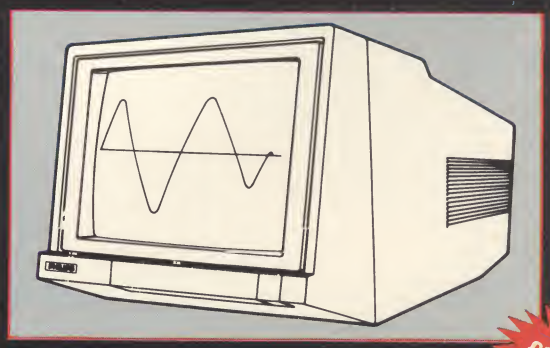

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GALDREGONS DOMAIN

Program: Galdregons Domain
Price: £19.95
Supplier: Pandora, Mercury House, Calleva House, Aldermaston, Berkshire RG7 4QW.
Tel: 07356 77421

CAST as a barbarian, you have been asked to recover the five gems of Zator and return them to King Rohan before the evil wizard Azazael can get his malign mitts on them. That's the basic plot of Galdregon's Domain, a mouse-driven graphic adventure from Pandora.

The main part of the screen shows

In the best possible taste..

Program: Emmanuelle
Price: £19.95
Supplier: Active, 16 Greyhound Road, Greyhound House, Hammersmith, London W6 8NX.
Tel: 01-385 7622

HOW's your erotic potential these days? Had any sweet languishings travelling up your spine? Possibly your brain has been boiling with all that ambient eroticism that surrounds us? Surely you've been applying the three laws of eroticism as part of your daily routine?

In case you think I'm several bricks short of a load, let me explain. I've just been reading the manual that comes with Emmanuelle, a new graphic adventure originating in France.

The game is all about enhancing your amorous abilities and such terms as those I've used above are liberally sprinkled around the play guide. Now you might think that this is a game aimed strictly at adults, but let me tell you that despite its dubious morality and attempts to titillate, Emmanuelle is not so much soft porn as a rather schoolboyish effort at combining sex and adventure.

Beginning in Rio, you have to track down Emmanuelle and get on the plane with her when she flies back to Europe.

In order to succeed with this femme fatale, you have to spend a fair bit of time building up your erotic potential by chatting up women and generally endeavouring to seduce anything that moves. A man named Mario can assist by letting you into the secrets of the three laws of eroticism.

Much of the game is spent travelling to and from airports, visiting Salvador de Bahia, Iguacu, Rio de Janeiro and Manaus. Virtually the whole adventure involves dialogues with various people you'll meet, aimed at obtaining information or showing how virile you are.

In hotels, you can talk to the doorman, bartender, or any females having a drink, or nip up in the lift and play at being a Peeping Tom by spying though the keyholes of the hotel bedrooms. A casino gives you the chance to earn some cash.

Down on the beach you may well have an opportunity of seeing Emmanuelle in her birthday suit while elsewhere two silhouettes on a blind provide futher titillation. Board a yacht and you might just cop a bottle of artificial aphrodisiac for your trouble; while diving into the sea from a cliff may earn you a small statue, all necessary for completing the game.

The game is played with the mouse, pointing and clicking on places and people on the screen. Clicking on a certain location usually takes you straight there. Multi-optioned speech and thought bubbles allow you to determine your approach to a situation.

Graphically the game is quite impressive and there are some good atmospheric picures, but quality of plot, sound, puzzlement and interaction don't always match up.

Bob Chappell

a three dimensional picture of your current location. Immediately below is a one-line horizontally scrolling message window. The lower part of the screen contains direction and game icons. Clicking on the East or West compass icons executes a 90 degree turn, whereas clicking on the North or South icons lets you walk forwards or backwards.

The game icon brings up a display in the centre panel. This includes status, combat, potions, scrolls and the commands open, close, lock, unlock, talk, buy ale, run, teleport, buy healing, load and save a game.

A separate screen called up by the right mouse button provides an impressive large-scale inventory display. Using the mouse, you can swap items between the current location and your backpack. You can also feed, dress and arm your character.

Galdregons Domain bears some similarities to Dungeon Master, particularly in the early stages where you trudge through what appears to be an endless dungeon maze. Characters pop up at random and sometimes a room can be crowded with them. They don't have much to say and their responses are terse and repetitive.

Object finding and collecting is not handled very well. When you enter a room containing an item the object indicator on the status display is highlighted, but only if you have already called up that display using the game icon. You then have to call up the inventory screen in order to collect the item.

Combat is initiated by selecting a weapon from a list and clicking on the character you wish to fight. No signs of battle are seen, but a single repeated grunt is heard. When a character is killed you have to access the inventory screen to see if he was carrying anything.

There are hundreds of locations, although many are the same. Once outside the dungeons a map is available and you'll get to visit such places as the labyrinth of the Medusa, the Caves of Doom, the Forset of Elves and the Assassins Guild.

Strongest point is the graphics which are colourful, detailed and eye-catchingly drawn. Gameplay is a bit of a letdown – you spend a great deal of time tramping around a large landscape with not much in the way of incident except randomly generated creatures to fight.

There are very few sound effects – gulp of food, grunt of combat – but no animation. Although the game is attractively presented, there didn't seem an awful lot in it.

Bob Chappell

Sound	3
Graphics	7
Playability	5
Value for money	6
Overall	6

SECOND Sight

Galdregon's Domain strikes me as a cousin of Dungeon Master. It's interesting and graphically quite attractive, but for me doesn't quite have its relative's addictiveness. However, I'll just have one more go...

Janice Murray

Presentation	8
Atmosphere	6
Puzzlement	5
Value for money	5
Overall	6

SECOND Sight

Don't worry about the title, Emmanuelle, it's all done in the best possible taste. I found it an interesting mouse-driven graphic adventure. The interaction between the other characters is important, though the response you get isn't always what you want. Try before you buy.

Janice Murray

Budget space epic

Program: Chase
Price: £9.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JH.
Tel: 01-377 8411

THE story behind Mastertronic's 3D wire frame Chase reveals that you are a brave space pilot who has been selected to save the Princess of Chardonnay from the clutches of the evil Disgusmatrons. To achieve this goal you must fight your way through several game stages, the first involving manoeuvring your ship through an asteroid belt, destroying five Disgusmatrons on the way.

You have a cockpit view of the action, though the reasonably good graphics at the bottom of the screen which show the front of the craft don't extend to the rest of the play area because wire frame graphics are in operation here.

You control the movement of your ship with the mouse – the left button fires a laser while your right button controls your speed in a similar manner to Starglider. Your craft is equipped with 10 shields which are depleted every time you are in collision with another object.

The second stage involves flying your craft between twin monoliths. The Disgusmatrons don't make an appearance on this level, which makes it slightly easier to complete. You then have to fly your ship through a quadrilateral vortex – looks like a series of expanding squares to me.

Still no Disgusmatrons, but just when I was beginning to think that I would never see one of those wire frame blue things again they turned up on stage four. This involves flying through a tunnel while avoiding pillars positioned in awkward places.

The Disgusmatrons managed to make an appearance on the last stage and you have to dispatch them in order to complete it. If you manage to get through all the stages the game goes back to the beginning, but with the difficulty level increased.

Even though this is a budget offering a few things were annoying. The game didn't auto-boot, you have to click on it from the desktop and the instructions begin on the right hand side of the page and continue on the left. Also it only takes up 100k of a single sided disc.

Budget priced doesn't always mean budget quality, but in this case it probably does.

Stephen Cogan

Sound	5
Graphics	6
Playability	7
Value for money	8
Overall	7

SECOND Sight

This is definitely in the budget category. Nevertheless I found it quite enjoyable – and budget software is always welcome. The 3D wire frame graphics aren't up to Starglider standard, but are reasonably good. The different stages add a little variety and the difficulty level is about right. Disgusmatrons aside this is a reasonable game but I recommend that you try before you buy.

Roland Waddilove

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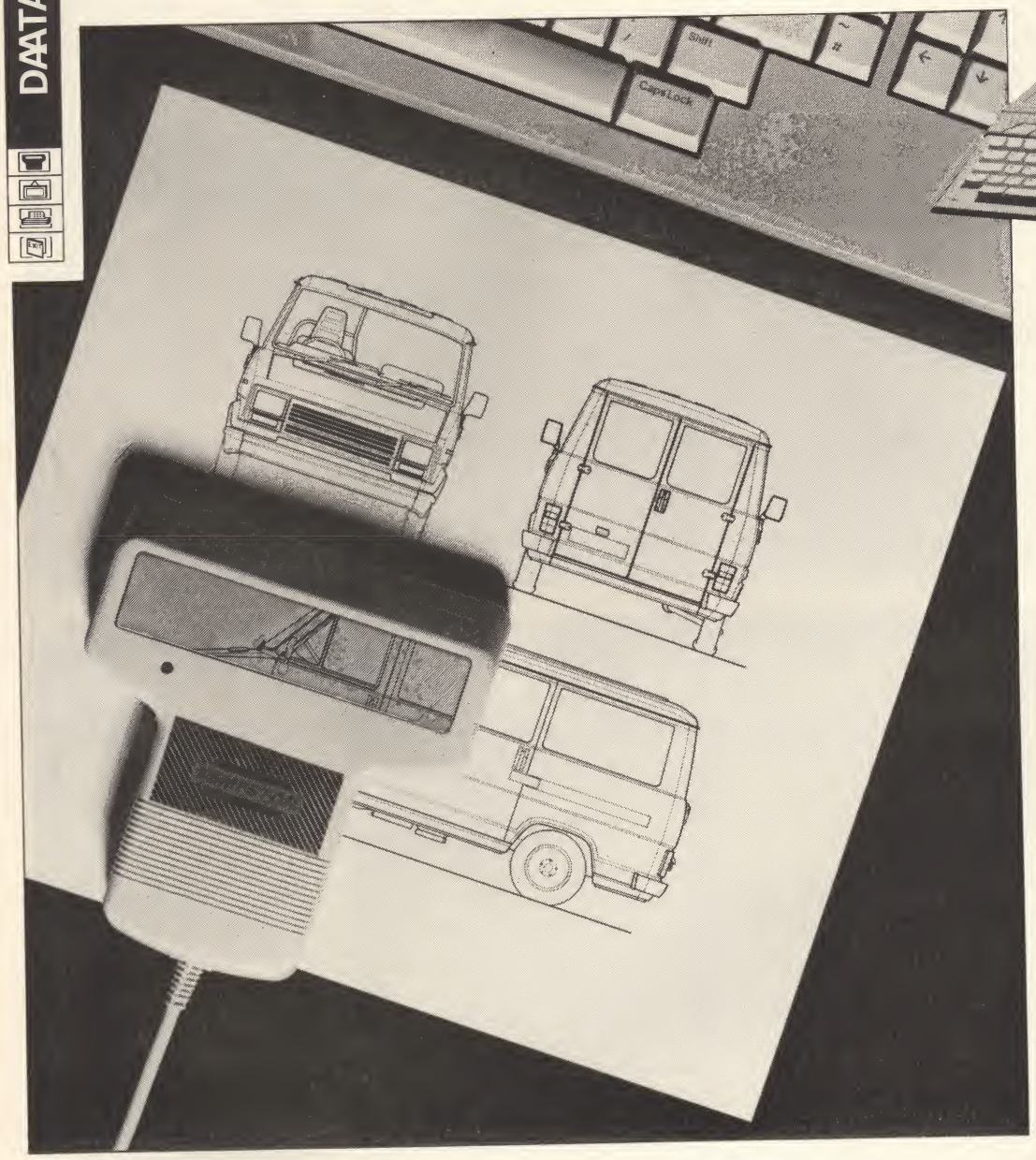

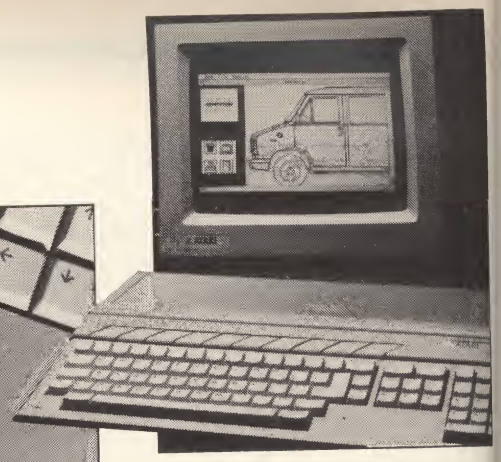

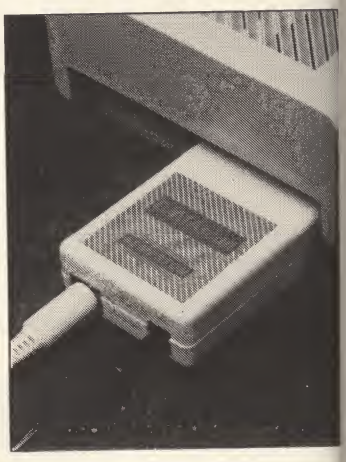

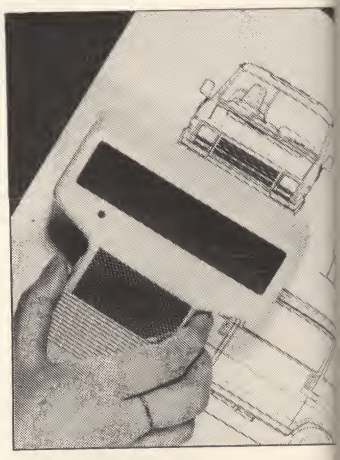

New from Kempston is DAATAscan, a hand-held scanner for the transfer of graphic images to an Atari ST.

Complete with easy to use GEM based software, DAATAscan allows images to be scanned from newspapers, photographs, books etc. then saved in the most popular and widely supported graphics file formats.

Images produced by DAATAscan can be imported into leading DTP packages such as Fleet Street Editor (Mirrorsoft) and Desktop Publisher (Timeworks). They can also be incorporated into the pages of DAATAfax, a computer-based personal organiser.

The DAATAscan software, which is ICON driven, enables an image to be scanned, cropped, reduced and then saved as a bit image file in IMG format.

Conversion routines are also provided to convert to DEGAS, Neochrome, TIFF and MSP formats.

The scanner is connected to the ATARI ST through an interface module which fits into the ROM cartridge port and has two sockets to accept the scanner and PSU. The scanner controls include start-of-scan, contrast and choice of scan mode.

The scanner has a scan width of 105mm, a resolution of 200 DPI and a scan speed of 2cm/sec. It can operate in black and white and 16 Quasi-tones (half tones using dither patterns).

HYPERPAINT

Also included with DAATAscan is HYPERPAINT, the official Atari ST Graphics package, which includes features such as variable zoom (up to x 16) and rescale.

DAATAscan is available for £275 inc. complete with software, manual and interface module.

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Keys!, a new sequencer from Dr T, is given a thorough play-testing

Tadpoles and telegraph wires

MUSIC ON THE ST

By IAN WAUGH

MOST sequencers are heavily biased towards real-time recording, and although a few make a token effort to support step-time input, most do not use music notation.

Keys! v2.1 is a new program from Dr T. It uses stave notation, and in fact music can only be entered in step time. Notes can be entered with the mouse or from a Midi keyboard.

According to its author, Jeffrey Baker, it was written primarily to create step time files for Dr T's KCS (Keyboard Controlled Sequencer) and MRS (Midi Recording Studio) although it works as a stand-alone program, too.

There is only one screen but a couple of different windows pop up in the lower half when certain options are selected. Notes are entered on a grandstave which comprises a treble and bass clef.

The program supports eight note polyphony and all the notes are shown on screen at once. Although this is preferable to having a separate display for each voice, some chords may cause the notes to overlap.

The music can be transmitted via Midi or sent to the ST's internal sound chip – which obviously restricts you to three note polyphony. You can call up a simple waveform utility to change the envelopes used by the sound channel.

To enter a note on the stave you click on a duration in the Note Box (upper left) then click on the piano keyboard running across the middle of the screen. The durations range from a 64th note triplet to a dotted semibreve and you can define your own note lengths, too.

If you click and hold you can adjust the velocity of the note by moving the pointer up and down the screen. You can set the upper and lower velocity range which is useful and the velocity values also affect the sound chip. Chords can be entered by clicking and holding the right button as you enter notes.

You can enter pitches and velocities from a Midi keyboard simply by playing it, but the durations, must be selected from the Note Box first. There is a Rhythm Mask, however, which allows note sequences to be imposed on a fixed range of durations and this can save time. You can change Midi channels by clicking on the Midi Strip above the keyboard.

Although the operations described so far are reasonably simple and fairly musical, the program thinks in terms of events rather than music. To edit a note, for example, you must enter its event number then type in a new Midi note number. To delete or move events you must enter the range in event numbers.

Even the time signature must be entered by specifying the steps per measure. For example, 96 is 4/4 time. Key signatures, ties and several other items of musical miscellanea are not supported. If you enter a note which should be tied over a bar line, the program defers the bar line until after the note.

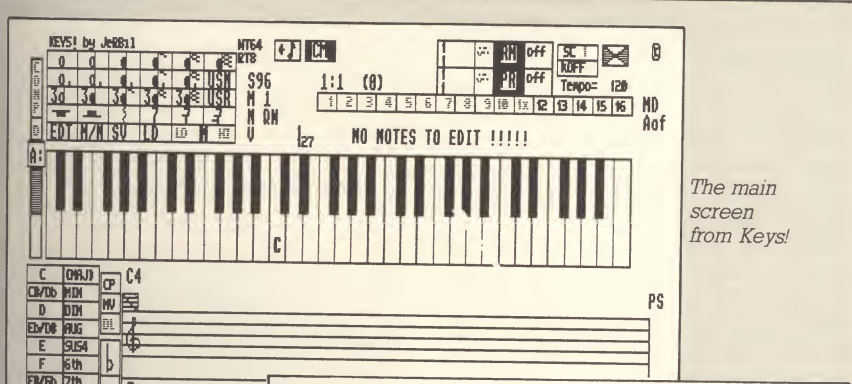
Many pro sequencers use numeric event editing, too, but these tend to be real-time programs. It's a shame the highly graphic notation environment doesn't allow you to select notes and ranges by clicking, dragging and rubber-banding. This dependence upon numeric input takes the edge off the attraction of graphic notation. But then Keys! is written in GFA Basic.

You can enter 9,999 events on a 1040 ST and 2,888 on a 520. This is not a lot by current sequencer standards but you'll probably rarely want to enter a single piece as long as that in step-time.

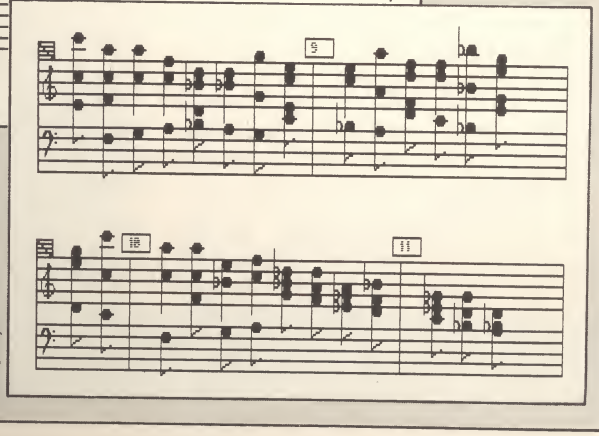
There are several playback options including playback via Midi, the sound chip and both. Although the stave doesn't scroll as the music plays a special playback mode can show the notes currently playing on the on-screen keyboard and the current event number. The manual admits, however, that this can cause erratic playback, although as it is intended mainly to supply information it shouldn't cause any problems.

To play a piece you must toggle from Record to Play mode. It would be helpful if the program returned automatically to Record mode after playing as you usually

Turn to Page 40 ►



The main screen from Keys!



Printout of part of Sparks music file

◀ From Page 39

want to edit a piece after playing it. It may seem trite but I found this a bit of a nuisance.

A rather novel feature of Keys! is the inclusion of a simple algorithmic composition routine called Auto Composer. The next cheapest algorithmic composition program available for the ST is Dr T's Fingers at £79.95 – reviewed in our February 1989 issue.

Auto Composer is far simpler than Fingers but it makes an attempt at melodic compositions with parameters such as melodic and harmonic tension, scale type, key change frequency and chord change frequency. You're unlikely to create a magnum opus, but it's fun and the compositions can be displayed on the stave for further analysis or editing.

You can obtain a printout of a piece – this is simply a screen dump – although note stems aren't joined and bars may be split at the end of a line.

In conclusion, considering Keys! was written in Basic it's something of an achievement. It has several interesting, novel and just plain useful features but I can't help feeling the programmer has spent too much time at Dr T's "school of numbers". The parameter boxes are rather small and the names of the functions are abbreviated to one or two letters.

Conversion programs are supplied on disc to allow you to swap files between Keys! and Dr T's MRS and Copyist programs.

Priced as it is, Keys! sits rather uncomfortably between the cheaper stave notation programs which mainly use the ST's sound chip and the more expensive but sophisticated scorewriters such as Hybrid Arts' EZ-Score Plus.

Price apart – and operational idiosyncrasies aside – if you want a stave-based step-time sequencer and one that uses the ST's sound chip, Keys! offers far more facilities than the cheaper competition. But be prepared to spend a little time getting to know it.

FACT FILE

Product: Keys!
Price: £49.95
Supplier: MCMXCIX, 9 Hatton Street, London NW8.
Tel: 01-724 4104/01

POINTS FOR:
Eight voice polyphony. Auto Composer. File compatibility with other Dr T programs. Can use sound chip.

AGAINST:
Highly numeric. Some operations rather fiddly. Many notation conventions not supported. Limited printout facilities.

Never ending journey

Our in depth survey of PD music continues with a look at some of the demonstrations on offer

HAVE you heard of PopMinis? They play music in the background while you ostensibly get on with some other task, although many other programs will interfere with the interrupts. Still, they're fun while they last.

ST UK's Music 1 disc contains 15 PopMinis – Popcorn is particularly interesting. It also contains another background music demonstration which plays via Midi. This really is a resiliant little devil and continued to play even after I loaded Activision's Music Studio.

Also on the disc is Intersect's Deluxe Piano and Orchestrator demonstrations which let you make music by playing the ST's keyboard. It also features Sound Mouse, which alters the pitch of two sound channels in response to mouse movements, and Sound Demo, which lets you trigger bombs, lasers and sirens. These are fairly common PD programs and can be found on many other discs.

Softville's Music 1 is virtually identical but without the Sound Demo. Music 2 contains Orch-Play, a jukebox demonstration program plus another nine PopMinis hiding in a folder called Desksongs.

A couple of popular music demonstrations reside under the generic title of Alite. They were put together by Audio Light, the people who designed and developed the Activision Music Studio.

The ST Club's Alite demonstration, Midi 3, plays 10 tunes and loads colourful pictures as it does so. The tunes use the ST's sound chip but also play over Midi. SWSL's Disc 25 is also an Alite demonstration, but this one contains seven Christmas pieces and some super pictures.

On the Midi front, SOS has a slideshow of Steinberg's new Kawai K1 Editor plus a demonstration of the new ST Replay 4 sampler which includes an extensive manual on disc.

Pandora is a relatively new software company which specialises in voice editors. They operate as desk accessories so you should be able to use them concurrently with most Gem-based programs. A great idea.

SOS has a demonstration of Pandora's DXessory program – for Yamaha DX six operator synths. It requires a high resolution monitor and rather meanly only runs for five minutes before it bombs out. Pandora's new Korg M1 editor demonstration has just become available, too.

SOS also has a demonstration of a commercial TX81Z/DX11 Editor which allows some editing before it times out. If you have a Yamaha TX81Z, however, you may prefer to check out the SOS TX81Z Editor which runs in colour and mono. It's a fully working program, entirely mouse-driven – except for text input – and parameters are altered by clicking on them.

It consists of two screens – one for Voice Edit and one for Performance Edit – and it holds three banks of sounds in memory. A complete bank or a single voice can be loaded and saved to and from disc.

Casio CZ-101 and CZ-1000 synths and Yamaha DX synths have attracted a lot of PD software. SOS has a disc of 32 DX7 voices by Ian Boddy – he was interviewed in our January 1989 issue – selected from Ian's The Voice Bank disc. They're saved as System Exclusive files for loading into Steinberg's Pro-24 or C-Lab's Creator or Notator.

FACT FILE

Softville PD Service, 55 Highfield Avenue, Waterlooville, Hampshire PO7 7PY.
Tel: 0705 266509

SOS Software, PO Box 30, St. Ives, Cambridgeshire PE17 4XQ.
Tel: 0480 61244

ST UK, 1 Bartholomew Road, Bishops Stortford, Hertfordshire CM23 3TP.

ST Club, 9 Sutton Place, 49 Stoney Street, Nottingham NG1 1LX.
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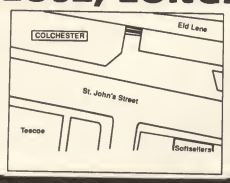

VISA

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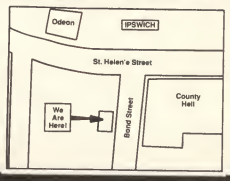

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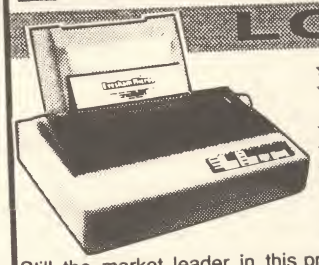

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A Kuma cracker

Nic Outterside looks at the latest version of K-Spread 3 spreadsheet

SPREADSHEET packages for the ST are many and various in their design, price and function. From the simple but graphically orientated Graphic Sheet by Glentop to the complex and mathematical Masterplan and Lotus 1-2-3 clones the marketplace is indeed crowded. This makes choice very difficult, but among all these packages a few lights shine brightly.

One of these beacons, K-Spread 3, is the latest full functioning and comprehensive 8,192 rows by 256 column spreadsheet from business software specialist Kuma.

Kuma has built on the success of K-Spread 1 and 2. And version 3 includes all the advanced features you would expect in a top of the range spreadsheet with the exception of a built-in graphic extension. However, even this is catered for with an interlinking K-Graph 3 program costing £49.95.

K-Spread 3 comes on one single-sided disc – only just, as it is 370k in size – packaged with a hefty and informative 220 page manual which includes a handy 150 page reference section, and useful working example tutorials. In fact, the manual even outshines the proclaimed Timeworks tomes which accompany that company's products.

A closer look

As a spreadsheet it combines Lotus style commands with Gem operations – drop-down menus allow fast access to most features – in addition to function key commands giving you maximum flexibility when entering data and using the program.

An excellent and powerful extension allows loading and working on multiple worksheets, the number only limited by the memory capacity of your ST.

The screen display is clear and precise, and though full of powerful command icons it is not cluttered. The sheet window – shown in Figure I – is extremely flexible, surrounded by Gem icons and a function key legend.

Setting of column and row headings is simplicity itself and resizing of cell width and height is quick and easy using the familiar mouse dragging technique. K-Spread 3 also allows for full left/right/top/bottom justification and selectable word wrap. The columns are headed alphabetically and the rows numerically, making for ease of coordinate referencing.

At the top of the screen is a drop-down menu bar which features many manipulative menus – including a relative/absolute value reference toggle – which are fully explained in the manual's reference section.

At the bottom of the screen the function key legend/icon bar gives you maximum flexibility and offers short cuts, accessing commonly used functions. You also have the choice of selecting these options with the mouse by clicking on the respective box in addition to pressing the appropriate function key.

K-Spread 3 is always in data entry mode, either the default Entry mode, Edit mode or C.Edit mode. In Entry mode cells containing already existing data are overwritten, avoiding the tiresome need for deleting the existing entry.

In Edit mode existing data can be entered, permitting minor modifications to be made. C.Edit (or Cursor Edit) mode enables movement around the sheet while editing.

K-Spread 3 will load Lotus, DIF and standard Ascii files with ease, for editing, calculation and general usage. Ascii files can also be loaded from word processors as either text or values, and in addition the spreadsheet is compatible with many other Kuma products such as K-Data, K-Word 3 and K-Graph 3. Merging data to and from them will let you produce

Turn to Page 46 ▶

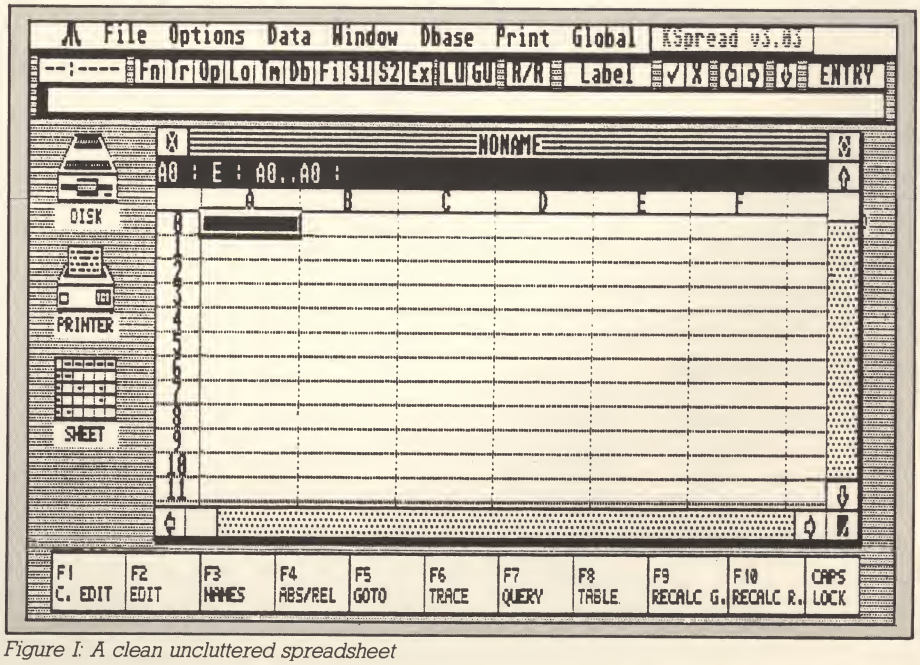

Figure I: A clean uncluttered spreadsheet

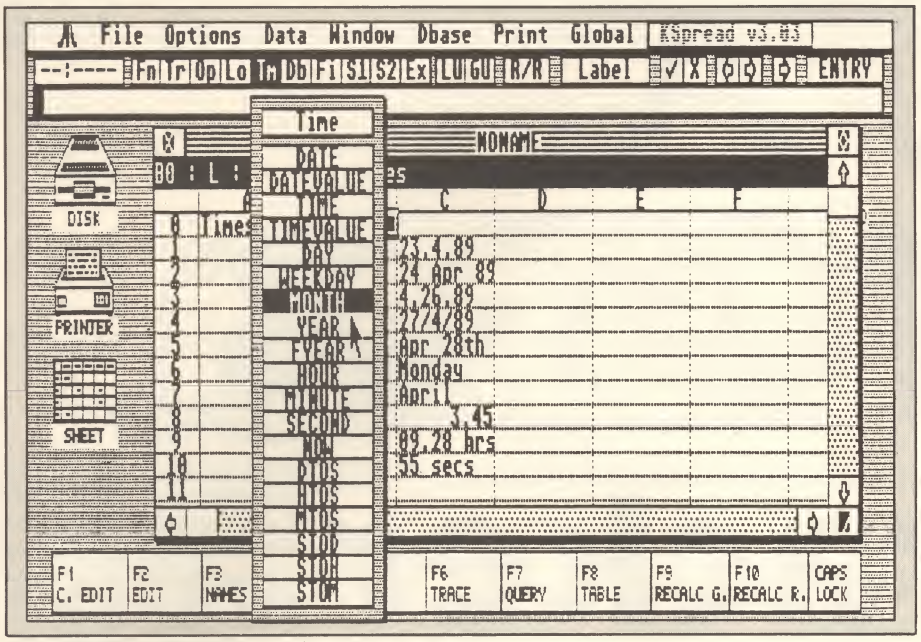

Figure II: Time/date values can be preformatted

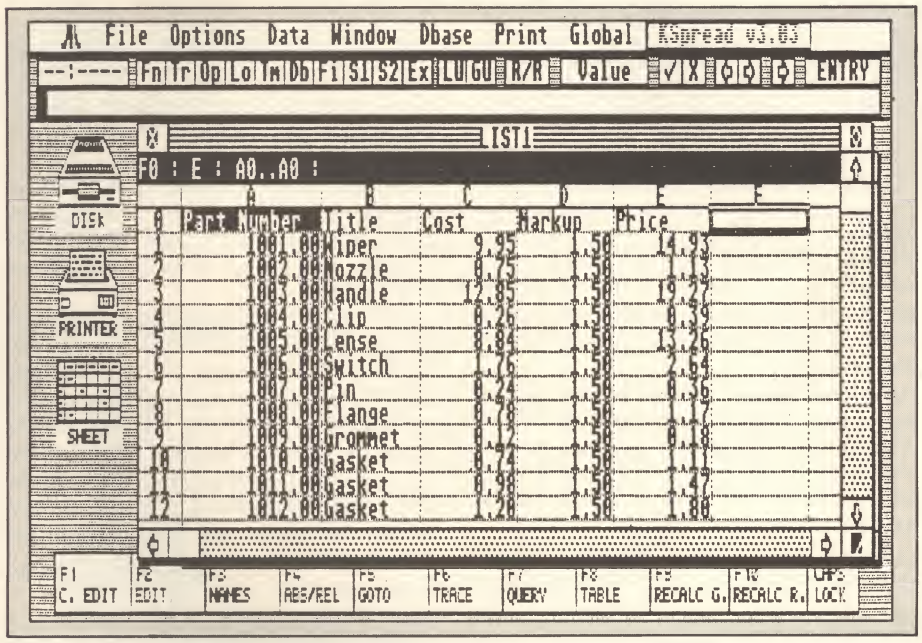

Figure III: Part numbers are filled by column

◄ **From Page 45**

impressive looking reports and documents. K-Spread 3 allows database storage of up to 8,192 records and, like Lotus, includes powerful operations such as Find, Delete, Extract and Unique.

Internal file merge is sanctioned with overwrite, addition and subtraction from existing files. This means that files can be merged with running totals produced automatically if required.

The sheet can be prepared in advance with text and formulae in readiness for data to be added at a later date. Whole zones can be primed as text or value areas for fast, easy entry of such data.

Entries can be made as either labels, values or formulae and preformatting can be set-up to allow for dates, times – as shown in Figure II – prices and other independent value settings. You can fill by row or column giving a start value, increment and finish value, ideal for costing calculations on large quantities of individual parts – as can be seen in Figure III.

In fact dates and times can be displayed in a variety of formats and used in calculations of things such as loan repayment schedules.

Values can be displayed in eight different formats, including normalised, percentage, date, time, Roman numerals and bases between 1 and 16.

Powerful mathematical and computational logical formulae are also licensed, including the Lotus style Goto, Trace, Query and Recalc. Such formulae can involve constants, global or specific cell referencing and all arithmetic operators.

The program permits user-defined functions which can be constructed, saved and used when required. They can be loaded alongside over 100 preprogrammed built-in functions which include a powerful convert function to cross-calculate inches to centimetres, gallons to litres and so on. Also available are statistical functions, 11 financial functions and more than 25 string functions.

When it comes to the crunch spreadsheets are normally used for tabulating and calculating monetary data and for making financial forecasting easier. It is in this major area where K-Spread 3 outscores most of its rivals, with a plethora of easily accessible monetary analysis functions. The manual includes full referencing of all these routines.

As if to add icing to the cake, your completed or updated sheets can be output on Epson FX-80 compatible printers via a default sideways driver, commands being sent directly from the spreadsheet.

A comprehensive printer configuration program is also included, enabling output to virtually any machines outside the Epson compatibility range.

In conclusion

K-Spread 3 is indeed an extremely powerful, fast and friendly spreadsheet, featuring most of the facilities you would expect to find on Lotus 1-2-3 clones, and for a fraction of the cost.

Beginners may feel a little lost for a while, but given the nature of K-Spread 3, this shouldn't last long. For all its complexities and power, it is a comfortable spreadsheet to use.

The superb manual takes you through all necessary procedures in an amiable and exhaustive manner and Kuma provides an excellent technical support service.

For my money K-Spread 3 is probably the pick of the pack of spreadsheets available for the ST.

FACT FILE

Product: K-Spread 3
Price: £89.95
Supplier: Kuma Computers, 12 Horseshoe Park, Pangbourne, Berkshire RG8 7JW.
Tel: 07357 4335

POINTS FOR:
Powerful full functioning spreadsheet. Many mathematical and calculatory functions available. Gem or keyboard driven for flexibility. Very informative and well written manual.

AGAINST:
Nothing substantial, but graphics capabilities must be bought separately.

COMPETITORS REVIEWED:
VIP Professional – October 1987
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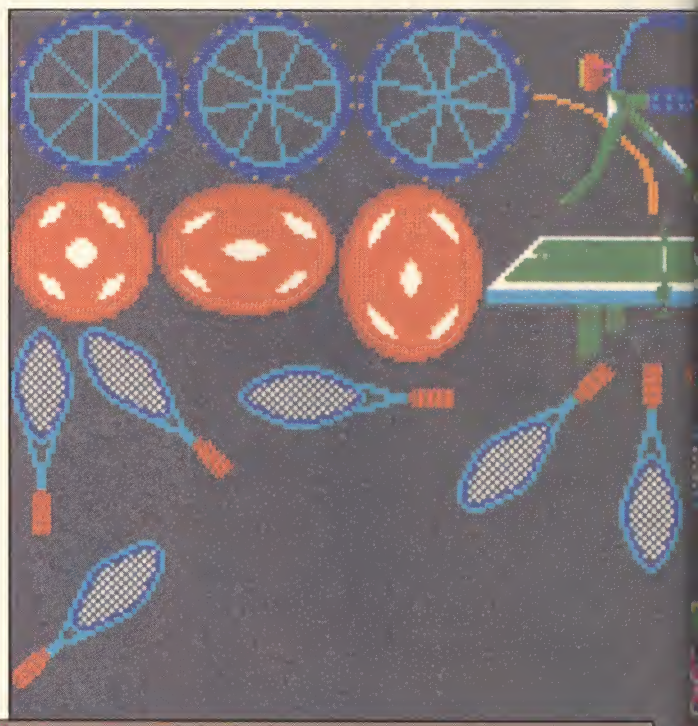
A blaze of colour jets in



Nic Outterside tests a superb inkjet colour printer but discovers some annoying snags

A WIDE range of colour printers is available for your ST, from the budget Okimate 20 thermal transfer to the much more expensive Canon PJ80. One of the latest to hit the market is the Integrex Colourjet 132.

Most colour printers use multi-colour ribbons to produce the palette range. These are still dot matrix machines and so make a lot of noise and produce a grainy output.

However, the Colourjet 132 fires little spots of ink at the paper from its four reservoirs of blue, red, yellow and black giving a much smoother dot matrix effect – and without the noise too.

Impact printers use eight or 24 pins so only one pass across the paper is needed to display a line of text. But a jet printer can only print one line of dots at a time, in this case in colour, so it is much slower than its impact contemporaries – around eight times slower.

The standard Epson parallel connector is used to link the Colourjet to the ST, and once plugged in you can treat it exactly as you would any other printer. The printer is housed in a smart beige casing with a coffee colour plastic hood to protect the paper supply – it makes my Epson FX-80 look positively ancient.

One of the most noticeable things about the Colourjet 132 when you set it up, is that the paper, on a roll which fits under the hood, has no sprocket holes and is friction fed through the machine.

The set-up instructions are fairly complex and require you to depress a lever while pressing a button – a similar procedure is used when packing – to prevent the openings through which the ink is fired becoming clogged when the ink dries.

You are warned not to leave the printer off without protecting it against clogging, however during the time I tested it – often leaving it switched off for days, or on for hours without being used – I never had any trouble with clogged jets.

The manual is perhaps one of the most unhelpful and poorly printed I have recently seen. Although it contains many pages of technical appendices, some important character control codes are so badly duplicated that they are almost unreadable.

Also the manual does not explain clearly how to control the printer to produce full colour solid dumps like the ones shown here – not even an Epson manual-style list of what each control code does. So the main problem lay in

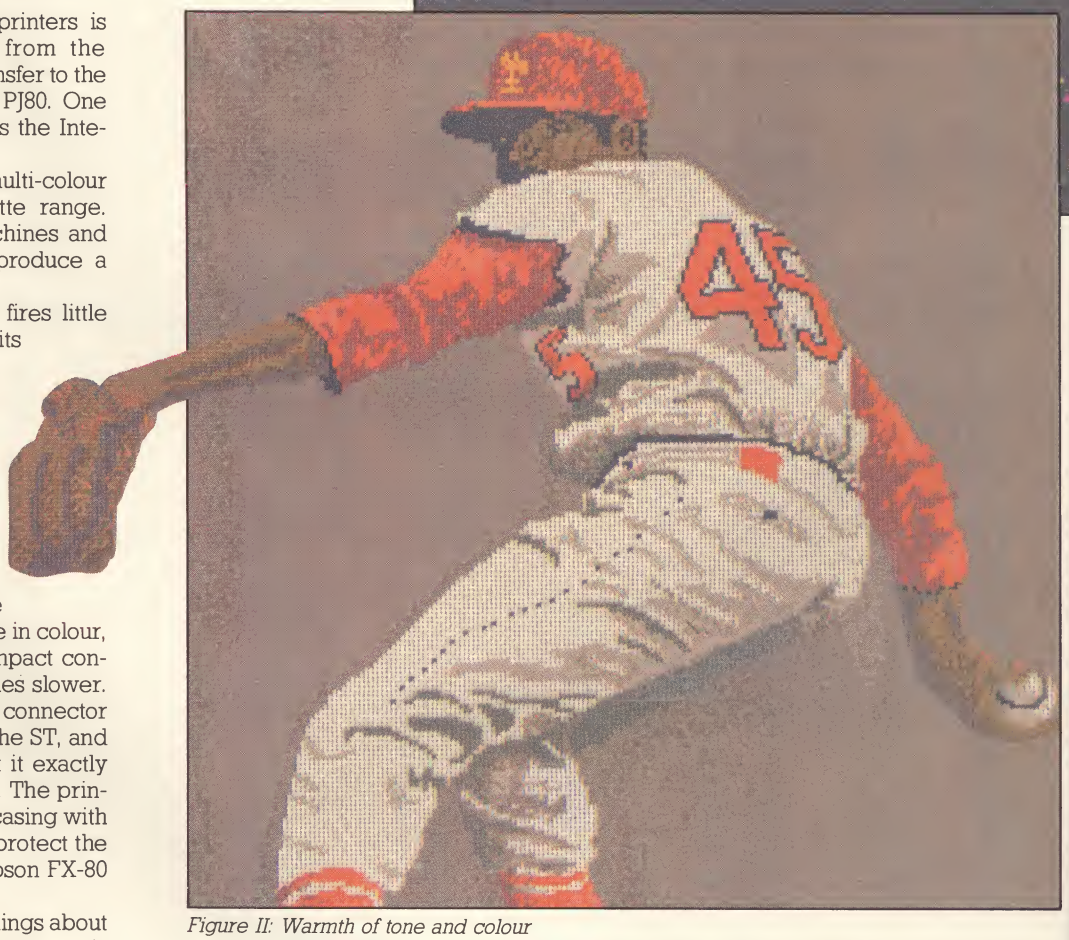


Figure II: Warmth of tone and colour are beautifully reproduced

Figure I: A colour dump of a picture produced by Art Director

getting any sort of dump at all. In the office we use Electronic Arts' Degas Elite as our standard art package for producing screen dumps. It contains 12 customised printer drivers, but unfortunately not one to support the Colourjet 132.

I next turned to Eidersoft's Quantum Paint which advertises a colour driver for this machine. A quick phone call to Eidersoft brought the reponse that due to lack of demand the driver had not been produced.

In desperation I rang Integrex, supplier of the Colourjet, to be told that a company called Gossamer Graphics (Tel: 0932 781152).could provide the necessary driver.

A phone call to Gossamer brought further disappointment – a driver was available, but only for use with Mirrorsoft's cultish Art Director program.

However, Gossamer Graphics kindly sent me the correct driver by the next post and I was at last able to test the printer. Next came disappointment number three – due to memory constraints the driver would not install alongside Art Director on my 520STFM.

However, I managed to install the driver and art package side by side on my Mega 2 ST without any problems – I imagine they would also work together on a 1040ST.

Now all frustrations disappeared as I loaded pictures into Art Director and examined in amazement the high quality printouts I could obtain.

Figure I shows a dump of an Art Director picture. The clarity and depth of colour are absolutely amazing – the best I have seen on any printer for the ST. Figure II gives an example of the warmth of tone and colour which can be obtained using Art Director and the Colourjet 132 in tandem.

Quality was excellent with every dump made because the ink runs slightly, merging with the next dot just enough to add to the effect without detriment to the image.

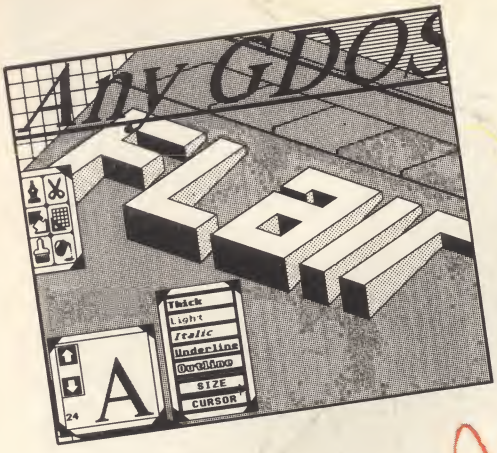
Hopefully if it proves popular with ST owners, producers of other art packages – Electronic Arts included – will produce drivers to support the excellent Integrex Colourjet 132.

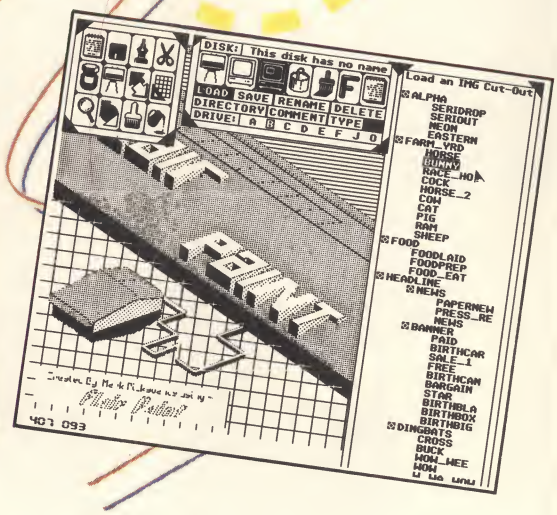
FACT FILE

Product: Colourjet 132
Price: £677.35
Supplier: Integrex, Church Gresley, Burton on Trent, Staffordshire DE11 9PT.
Tel: 0283 215432

POINTS FOR:
Very smartly housed. Beautiful dumps can be obtained, rich in tone and true in colour.

AGAINST:
Lack of printer driver support. Does not work with Art Director on a 520STFM. Poorly written and badly duplicated manual.





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Flair Paint is a state-of-the-art, affordable graphics program that's perfect for creating attention-grabbing illustrations. Two and a half years in development, Flair Paint is written entirely in machine code to make it the fastest ST art package available – and if you have a blitter chip fitted it's blindingly fast.

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- Generate a range of tones between two selected colours – ideal for intricate shading
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Flair Paint comes on two single-sided discs containing program, Gdos drivers, Gdos fonts and sample art, and a 76-page manual.

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STroll into space

Leslie Kaye explains the fundamentals of receiving and then interpreting images from high orbiting weather satellites

SO you've brushed the last space invader bits from inside your monitor, written to everyone with your word processor, and have planned to be out when the phone bill arrives after many happy hours with your communications package. Now for something completely different.

Scientists may spend lifetimes analysing data collected about our planet. However, you don't need to be a boffin to enjoy the ever-changing cloud patterns and the shapes of the continents, but there is much room for research if you are interested. So shall we talk about the weather?

I will show how with a little knowledge, some fairly inexpensive reception equipment and your ST, you can view and predict global weather patterns.

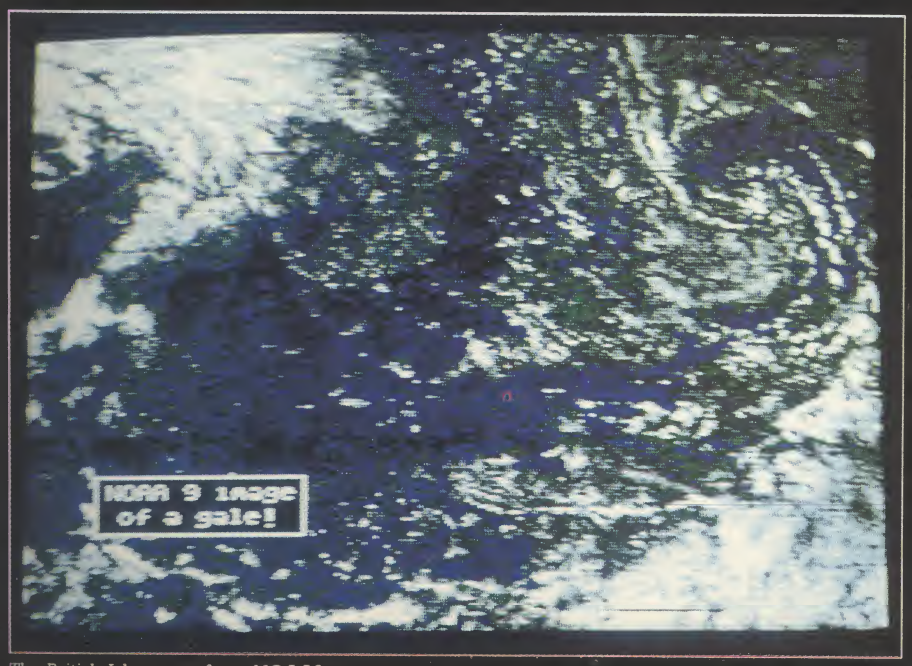
A number of low orbiting weather satellites pass near to overhead every day at heights of 800 or 900 kilometres. These are usually in close to polar orbits, travelling from the North Pole, over the South Pole, then back northwards again. During an orbit of about 100 minutes, the Earth rotates about 25 degrees, so that on each pass they seem to move to the west.

The satellites scan a line 1,500 kilometres or more at right angles to the direction of flight every half second. This may be at optical or infra-red wavelengths. The scan is converted into a radio signal and beamed to Earth. You can receive this signal with fairly simple equipment.

By feeding the scanned lines – received via a hardware add-on – into your ST, and displaying them one above another, a picture is formed. (You can, in fact, bypass the receiving stage by downloading the ready-made images from WeatherLink, via your modem and MicroLink).

With a resolution of two or three kilometres, cloud systems can be seen in quite good detail. Surface features such as lakes and coastlines are also visible in suitable lighting conditions. The times of satellite passes can be predicted for months ahead in seconds by your ST and suitable dedicated software.

With the correct reception equipment two American Tiros series satellites currently available to the amateur meteorologist or weather map voyeur. NOAA 10 can be received in the morning and mid evening on 137.5 MHz. NOAA 11 passes very early in the morning then again in mid afternoon, transmitting on 137.62 MHz. They fly sun synchronous orbits, so show up at about the same time of day.



The British Isles seen from NOAA9

Roving Reds

Very similar is China's Feng Yun satellite which appears at the same time and same place each day. Unfortunately the images transmitted are chaotic because it is tumbling in space out of control.

The more numerous Russian satellites can be a little more difficult to track down because their orbits generally shift a couple of degrees each day. Of the Meteor series, 1/30, 2.15, 16 and 17 may be heard. They give detailed, but lower contrast optical images while in sunlight.

Meteor 3.02 also gives a reverse infra-red image at night. Most interesting perhaps is the oceanographic satellite Okean. This sometimes transmits a radar image of the surface excluding clouds.

While low orbit pictures are impressive, any particular satellite may only be in range three or four times a day.

Much further into the cold depths of space, at about 36,000 kilometres above the equator, lie the geostationary satellites. These orbit the Earth once every 24 hours, and thereby keep up with the Earth's rotation, seeming stationary above us. Meteosat 3 is parked over the Greenwich meridian, from which lofty spot it can see the entire disc of the Earth at once.

It transmits optical, thermal and water vapour absorption images. Ground-based

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◀ From Page 51

computers cut the images into areas, add coastlines, and return the data to the satellite for retransmission for general reception.

Pictures are receivable almost continuously. Weather charts and retransmissions from the American geostationary satellites are also included. One of the American GOES satellites can also be received directly.

The hardware set-up

Satisfactory equipment for receiving low orbiting satellite transmissions can be bought for under £200. It consists of a simple X shaped crossed dipole aerial, a radio receiver and an analogue to digital decoder which also adds line synchronisation.

You will also need your ST and a colour monitor or TV. About 400k of ram is required and at least a single sided disc drive, so almost any ST will do.

A radio can be bought ready made, or as a kit. It should receive the 137 to 138 MHz wave band with good resolution. A dial is much preferable to digital tuning as it allows small adjustments to be made for the doppler effect resulting from the satellite's movement.

If you buy a kit, remember that if the printed circuit board is not already built, aligned and tested, expensive test equipment may be needed to get it working. However, constructing the electronics from a kit not only gives a cost saving, but also is more interesting – if it works – than having everything done for you.

Some decoders on the market are in kit form. Although construction takes several evenings, they are fairly easy to build once some practise with a soldering iron has been had.

This can now be interfaced with your ST. However, computer interface cable may need to be redesigned by your nearest micro electrician, as most decoders refer to the BBC Micro or Amstrad CPC. The easiest access to your ST is via the printer port as simple ribbon cable can be used without further hardware.

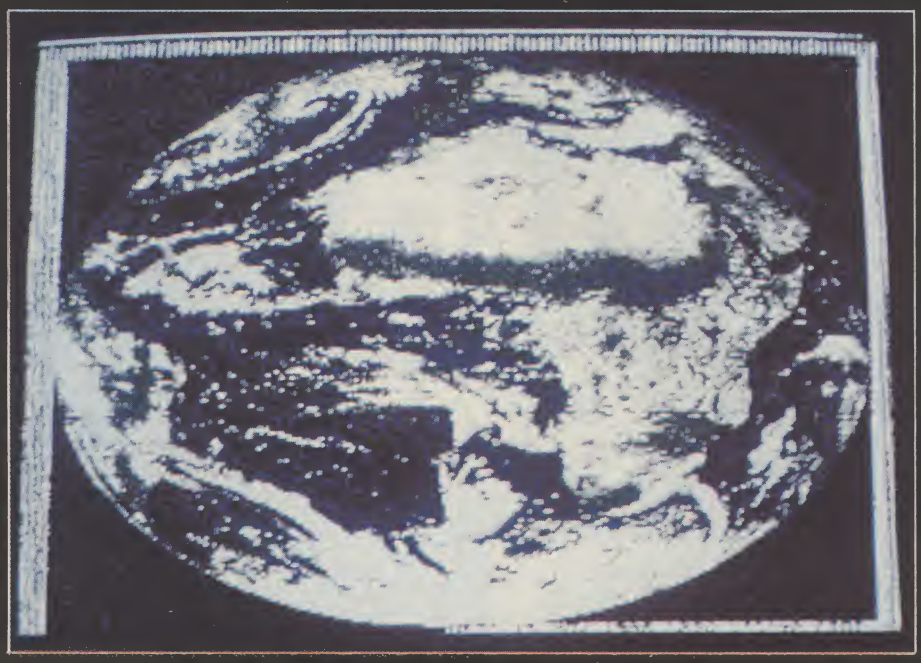
For a further couple of hundred pounds equipment can be upgraded to receive Meteosat. The extra components are a directional aerial – either a Yagi or a small dish – an amplifier, and a device to convert the 1694.5 MHz and 1691 MHz channel one and two – frequencies received down to the 137 MHz required by the receiver. Alternatively a separate 1600 MHz band receiver may be bought.

My equipment was bought from Maplin Electronic Supplies – catalogue available from any branch of W.H. Smiths – and Garex Electronics who advertise with the Remote Imaging Group.

Leslie Kaye is willing to help anyone with advice regarding reception equipment, interfacing and decoding. You may also like to contact the Remote Imaging Group which was formed in 1985 to promote and further interest in weather satellite watching.

It now has more than 1,000 members. The 1989 UK membership fee is £5. Benefits include a quarterly newsletter and blanket permission from the Department of Trade and Industry to receive satellite transmissions. The membership secretary is Des Watson, Norton, Gote Lane, Ringmer, East Sussex BN8 5HX.

Weather forecasting information can also be obtained from Weatherwatch UK on 025-683 448, after 5.15pm weekdays and all day weekends.



A panoramic view of the whole globe

The software

These satellite pictures can be brought into your home on your ST with the addition of a simple piece of commercial software, the Pictures from Space package, which incorporates a single sided disc and full documentation in a sturdy plastic wallet.

The software PFS.PRG orbit prediction option allows information about a satellite pass to be entered, and it will then show or print a three month weather forecast.

After selecting Orbit Forecast from an on-screen menu you can enter data from other satellites. This will obviously give a wider, comprehensive and hopefully more accurate picture of prediction. The forecast if desired can be printed out for hardcopy reference.

The package also allows you to decode, scan and view these satellite images. If required you can change each picture's colour, resolution and shading, polar reversal and zoom to requirement.

The processed image – in low, medium or high resolution – is saved as a Degas PI1 file for use with that art package and other compatible software.

Any previously saved Degas PI1 file may be printed on an Epson-compatible printer. For best results it is wise to process the image on the eight grey luminance palette to give the full palette range of contrast.

If you are already a part-time meteorologist or simply interested in turning your ST into a weather station further details can be obtained from the addresses below.

FACT FILE

Product: Pictures from Space
Price: £24.95
Supplier: Leslie Kaye, Fieldvale, Park lane, Snitterfield, Warwickshire CV37 OLS.

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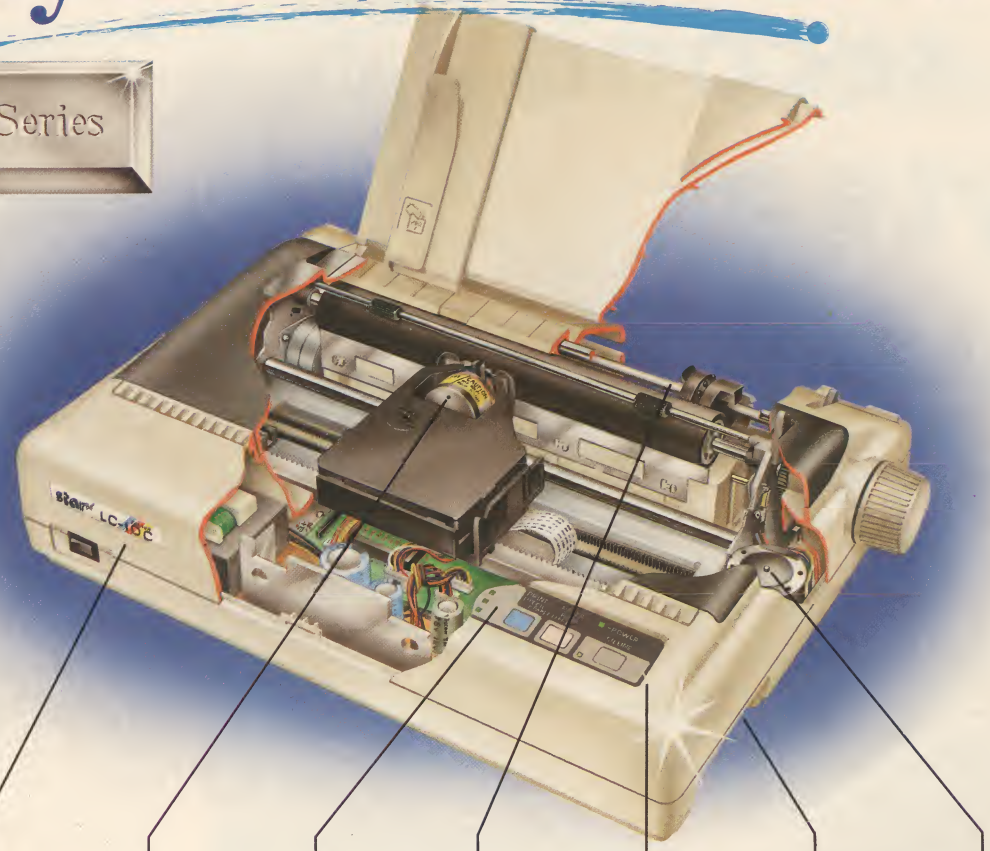

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The LC-10 is compatible with almost every computer's needs whatever the system. It can emulate most industry standards with ease, (there's even a Commodore version) a standard feature that we think should always be included. For connection over longer distances, there is even the option of a low-cost serial converter. And the range includes two models that also give you the option of first class seven colour printing.

Putting the LC-10 to work couldn't be simpler. At the mere touch of a button on the front control panel you can set your margins, choose from one of eight Near Letter Quality fonts and pitch sizes or simply put the paper feed into action. (No more inconvenient DIP switches to hamper you). And with the clip-in replacement ribbons, we've made ink stained fingers a thing of the past.

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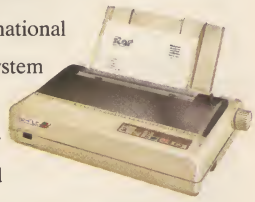

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A second byte at your chips

André Willey looks at a new hardware add-on which allows you to program your own 16k-64k eproms

EPROM – that's Erasable, Programmable Read Only Memory – chips are used in many different sections of the electronics industry, including computer design. So the availability of cheap and convenient programming units is very important. Most eprom programmers are separate, stand alone units, with their own keyboards and memory, but they tend to be rather expensive.

A far better solution is to connect the fundamental electronics of such a programmer to a micro and let it do all the hard work – which is just what J.E. Sinclare & Co has done.

Its Lakmeyer eprom programmer is a compact unit – just 8cm by 16cm, and only 5cm deep. A short length of ribbon cable and a rather flimsy plug connect it to the ST's cartridge port – a more flexible and safer arrangement than having the unit plug directly into the ST.

At the front of the light beige box is the eprom socket itself – a standard zero insertion force 28 pin type featuring a small lever to lock the chip into place. In fact, this lever is the only control on the whole unit – all other operations are carried out via the supplied software.

Standard desktop

On loading the software you are confronted with a standard desktop layout, with one open window to log the operations you have performed, and four menu titles – File, Edit, Chip and Type. There was one extra debugging option on my disc, but it's not certain if this will be on the final release.

The File menu permits loading and saving of the buffer, either in whole or in part. There is no facility to handle segmented files so you must make sure to convert any .PRG files you wish to use. You can read files from disc into the buffer with the option of adding the new data at a particular address – useful for building up machine code and data segments from different sources.

Similarly you can save either the whole buffer or specified portions. You can also save odd and even bytes separately – very useful when working with 16 or 32 bit processors which tend to store the low parts of each 16 bit word in one chip and the high parts in another. This method is used for the rom in your own ST.

The Edit menu is by far the weakest portion of the software, I've seen far better on a Spectrum. You are allowed to list 512 bytes to the screen, starting at any address within the buffer. This is painfully slow – taking more than 12 seconds to complete. It is then possible to scroll up and down within that window, which defaults to four lines deep, incidentally.

You may select either hexadecimal or Ascii mode, and then enter a start address. Each byte is individually displayed and you are prompted to enter the new contents, or press Return to skip to the next byte. Entering a full stop quits the Edit mode.

This seems woefully inadequate, compared with even the simplest sector or file editor programs. At the very least I would have expected a full-screen hex and Ascii view, with four-directional mouse cursor control and some form of search mode.

I felt so concerned at the lack of such features that I spoke to the supplier, who felt that editing would be so rarely used that it wouldn't justify the work. So why put anything there in the first place? If a job's worth doing...

The Chip and Type menus were much more useful, providing full control of data flow between eprom and buffer, and also the type of eprom in use. The Type menu is used first to select the chip version and the buffer size – though why the buffer doesn't just define itself to fit in available memory I don't know. One minor niggle here is that after selecting my choice from the four chip types I would have preferred to have seen this ticked as a reminder.

Data transfer

The final menu is entitled Chip, and allows you to transfer data between the eprom and the buffer. The first option allows you to copy from the eprom – or similar configuration rom chip – into the buffer. This data may then be saved or edited like any other buffer contents, and then re-written to another eprom. The size of the source and destination eproms need not be the same.

Before programming the chip the software will verify that it is blank, and prompt you if it already contains data. Similarly the chip is verified against the buffer after programming is complete – a nice touch. Both verify and blank checking are also available from the menu if you require them separately.

You can list the chip contents to the screen without disturbing the buffer, but

this is once again handled in 512 byte blocks via a four line Gem window – surely all of this could be presented via a fast, full screen editor-type environment?

Programming is both fast and efficient, taking just six seconds to check, program and verify a full 8k eprom and twice that for 16k. On the very odd occasions where a verify failed, another pass invariably corrected the situation.

Although the manual states that most Cmos and Nmos chips should work, I found that only the lower power Cmos variety would program successfully – due solely to supply current restrictions affecting the Nmos type.

I understand that later versions of the unit will feature an extra socket to which you can connect a more powerful supply – such as a small transformer. This should alleviate any further power drain problems when using Nmos chips.

Path problems

The software is fairly self-explanatory, but the version I received still requires a lot of work to clean up the Gem interface. For example, the file selector system failed to take account of path details other than drive A:, top level – any other selections were garbled almost beyond recognition.

After I sent the supplier some C source code which correctly handles the file selector box this problem was rectified, but surely it should have been detected earlier? Similarly the old mouse drop-through effect reared its ugly head on more than one occasion, and the Log window seemed rather messy.

On the whole this is a useful accessory for keen electronics engineer or computer hardware hacker, although of little use to casual programmers. Also, at £140 I feel that it is rather overpriced. Maplin, for example, does a fully self-contained unit which may be programmed via an RS232 link for £99.99, and it is far more complex internally. OK, so you need the software to drive it but anyone with even a little programming experience could design something to do the fundamentals, which is really all you get with the Lakmeyer utility anyway.

FACT FILE

Product: Lakmeyer ST Eprom Programmer
Price: £140
Supplier: J.E. Sinclare & Co., 82 Plumstead Common Road, London SE18 3RE.
Tel: 01-316 1779

POINTS FOR:
Easy to read and program chips. Simple connection. Very fast.

AGAINST:
Very poor supplied software – especially the editor. Currently unable to handle Nmos chips. Overpriced.

What is an eprom?

MOST people tend to think of computer memory solely in terms of the quantity of ram quoted in the brochures. In fact your ST can draw on a number of distinct and quite different forms of memory. Ram, otherwise known as random access memory, is a very temporary form of storage which will hold any data you require, but only for so long as power is supplied to the chip.

This means that any information stored in ram chips is lost when you turn the computer off. However ram storage does have the great advantage that all data is immediately accessible to the central processor, giving rise to the great speeds for which computers are famed.

The second form of memory is rom, or read only memory. This is like ram in that it comes in the form of chips which can be accessed very quickly, but unlike ram it contains pre-defined information which is built into the individual chip at the time of manufacture.

There is no way for a computer to alter or erase these contents, and so rom is an ideal way to provide the fundamental operating system. On the ST this includes Tos and Gem itself – so any upgrades or changes to either of these must be made by replacing the rom chips inside the machine.

Finally there a number of external storage devices, such as floppy discs and even remote memory accessed by telephone such as bulletin boards and other telecommunications systems.

There is no practical limit to the amount of storage available via such systems – other than perhaps a financial one – but they can't be accessed anywhere near as fast as the processor could handle the information, a fact of which most modem users will be only too aware.

An eprom is a compromise which exists half-way between ram and rom. It stands for erasable, programmable read only memory, and normally behaves as if it were a rom chip containing permanent data. However, unlike normal rom, its contents can be altered, though not in quite the same way as a ram chip would allow.

Put simply, an eprom chip may be completely erased only by exposing it to a strong ultra-violet lamp for about 20 minutes. This will change every bit of data in its memory to a value of one – or, if you like, all the bytes will be altered to 255.

To re-program it with new data you must switch some of those bits back to zero, while leaving the others set to one – thus forming the correct pattern of ones and zeros for each byte of data. This operation is done one byte at a time by supplying the correct pattern of bits to various pins on the chip.

The data byte itself is provided on eight pins of the eprom, while the address you wish to store it at – coded in binary – is provided at another set of pins. Finally the chip is fed with a power supply of 12.5 volts – which is more than twice its normal read-only voltage – and any zero valued bits are re-set.

It is theoretically possible to re-program an entire eprom by hand – using a set of switches to configure each pin with the correct values before burning them in – but even for a relatively small 8k chip the task would take forever.

As the program or data which you want to place in the chip is probably already stored in electronic form on floppy disc, or perhaps as another eprom or rom, it makes more sense to use an automated programmer to simplify the task, and that is what the Lakmeyer unit does.

It accepts instructions from the host computer and controls the eprom accordingly – setting up the address and data lines and the supply voltage according to the software's instructions to read or write to the chip.

Eproms come in a variety of standard sizes, and the Lakmeyer unit will handle most of the common 28-pin varieties, ranging from the 8k 27 x 64 chips up to the 64k 27 x 512's. Their size is often quoted in kilobits rather than kilobytes, and a 16 kilobyte chip is said to contain eight times as many kilobits – hence the 128 in the chip product number 27 x 128.

Eproms tend to be used for custom applications in electronic design to allow special control software to be stored permanently in firmware rather than having to load it in from disc before use.

There is no rule that says the pin layout of a rom chip must be the same as that of an eprom – roms are custom designed, and may be any layout the manufacturer requires – but in many cases the fact that board design and testing was carried out using eproms means that the layout will be compatible, simply to save on design costs.

This applies to all of the Atari XL/XE 8 bit range, and most older ST's – the ones which use six rom chips rather than the two now employed. In such cases you could program your own variations of the operating system using an eprom programmer.

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SCRAP BOOK

MATHEMATICS is a fascinating subject full of beauty, although memories of your maths teacher may cloud your view. We saw one example of this in *Atari ST User*, in January – the Mandelbrot set. Calculated using a mathematical formula, it can produce amazing graphic images when a computer is used to plot the points on the screen.

A completely different type of beauty can be seen in numbers themselves, as shown by **Julie Boswell** of Warrington, Cheshire. You have probably seen palindromes – words or phrases that read the same when read backwards, like MUM and MADAM. You can also have palindromic numbers as well, like 121 and 10201.

These two numbers are in fact special palindromic numbers, as their squares are also palindromes. The square of 121 is 14641, and 10201 squared is 104060401. Most interesting of all is the square of 11111 which is the number 123454321.

These special numbers are rare, and tracking them down is quite a challenge to the mathematician. Many hours of computer processing time has gone into calculating and printing them out. One of the largest special palindromic numbers we have seen is 101010101, but there are even bigger ones than this waiting to be discovered. All you need is an ST and a short Basic program.

The technique is quite simple: Take any number and test it to see if it is a palindrome, if it is then square it and test this too. If they are both palindromes then print them.

Program I, written in HiSoft/Power Basic, shows how this translates into a Basic listing. All you need to do is type it in, run it, then sit back and watch it calculate the palindromes.

If you leave the program running for a few minutes it will stop with an error report. There's nothing wrong with the listing, the problem is that HiSoft Basic puts a limit on the size of numbers you can manipulate. The biggest one you can have is &7FFFFFFF (written in hexadecimal).

However, as we are squaring numbers in the program, the biggest number we can test must be less than the square root of &7FFFFFFF. This is 46,340. When the program tests 46,341 it stops with an *Arithmetic overflow* error message.

To find even bigger special palindromic numbers we must resort to a different technique, as clearly HiSoft Basic can't handle the maths. Program II solves this problem by including its own maths routines. Two sections of memory are reserved as workspace – *n$* holds the number and *s$* holds its square.

Each digit is stored in a separate byte and there is enough space for a number 100 digits long. Basic doesn't recognise these numbers so a specialised print subroutine is required to display them on the screen. A long multiplication subroutine squares the number. (it's not the subroutine that is long, remember doing long multiplication on paper in your early school years?). All this makes the program slightly slower, but the advantage is that you can handle numbers of any size.

A word of warning: Large palindromes are few and far between, so go and have a cup of tea while your micro works them out. Better still, leave it running overnight. Rarer still are palindromic numbers whose square and cube are also palindromic. Program II can be adapted quite easily to calculate these, but we'll leave that brain teaser to you.

SCRAPBOOK is a regular feature consisting of short, simple programs sent in by our readers. It's a place where we can publish all of the interesting little routines that don't end up in our regular features but are too good for us not to share with other readers.

If you have a short program which you think other readers would find useful, send it to:

Scrapbook,
Atari ST User,
Europa House,
Adlington Park,
Adlington,
Macclesfield SK10 4NP.

```
REM Palindromic numbers
REM By Julie Boswell
REM (c) Atari ST User
REM HiSoft/Power Basic

DEFLNG a-z
PRINT "*** Palindromic Numbers ***"
number=10
DO
    IF FNtest(number) THEN
        square=number*number
        IF FNtest(square) THEN
            PRINT number;" : ";square
        END IF
    END IF
    INCR number
    dummy$=INKEY$
LOOP
END

DEF FNtest(n)
n$=MID$(STR$(n),2)
i=1
DO
f=MID$(n$,i,1)=MID$(n$,LEN(n$)+1-i,1)
INCR i
LOOP UNTIL i>LEN(n$)\2 OR f=0
FNtest=f
END DEF
```

```
REM Palindromic numbers
REM By Julie Boswell
REM (c) Atari ST User
REM HiSoft/Power Basic
```

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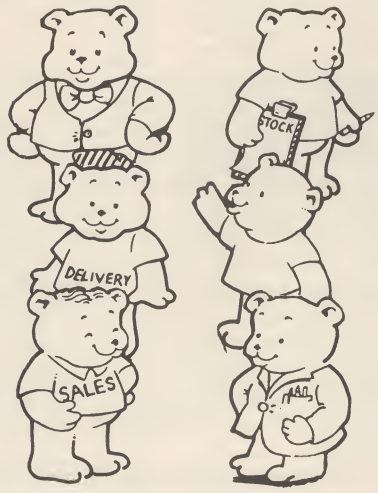

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```
DEFLNG a-z
n$=STRING$(101,CHR$(0))
s$=STRING$(101,CHR$(0))
num=SADD(n$)
sqre=SADD(s$)
POKEB num+99,9:POKEB num+100,13
POKEB sqre+100,13
PRINT "*** Palindromic Numbers ***"
DO
   IF FNtest(num) THEN
      CALL square
      IF FNtest(sqre) THEN CALL pal
   END IF
  increment
  dummy$=INKEY$
LOOP
END

SUB pal
shared num,sqre
PRINT "Number = ";
prnt(num)
PRINT " : ";
prnt(sqre)
PRINT " = Square"
END SUB

SUB increment
shared p,num
p=num+99
c=0
DO
   POKEB p,PEEKB(p)+1
   IF PEEKB(p)>9 THEN
      POKEB p,0
      c=1
   ELSE
      c=0
   END IF
   DECR p
LOOP UNTIL c=0
END SUB

SUB prnt(n)
p=n
WHILE PEEKB(p)=0
   INCR p
WEND
DO
   PRINT CHR$(48+PEEKB(p));
   INCR p
LOOP UNTIL PEEKB(p)=13
END SUB

SUB square
shared num,sqre
FOR p=sqre TO sqre+99
   POKEB p,0
NEXT
p=num
WHILE PEEKB(p)=0
   INCR p
WEND
s=p
FOR p=s TO num+99
n=sqre+(p-num)
q=num+99
c=0
DO
POKEB n,(PEEKB(n)+PEEKB(p)*PEEKB(q)+c)
c=PEEKB(n)\10
IF c THEN POKEB n,(PEEKB(n) MOD 10)
DECR q
DECR n
LOOP UNTIL q<s AND c=0
NEXT
END SUB

DEF FNtest(workspace)
ptr=workspace
WHILE PEEKB(ptr)=0
   INCR ptr
WEND
q=workspace+99
DO
  flag=PEEKB(ptr)=PEEKB(q)
  INCR ptr
  DECR q
LOOP UNTIL ptr>q OR flag=0
FNtest=flag
END DEF
```


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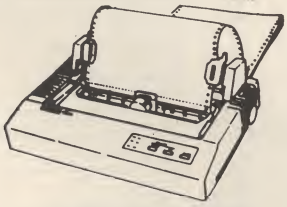

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A serious word

Nic Outterside visits Kuma and meets the men responsible for more than twenty serious application packages for the Atari ST

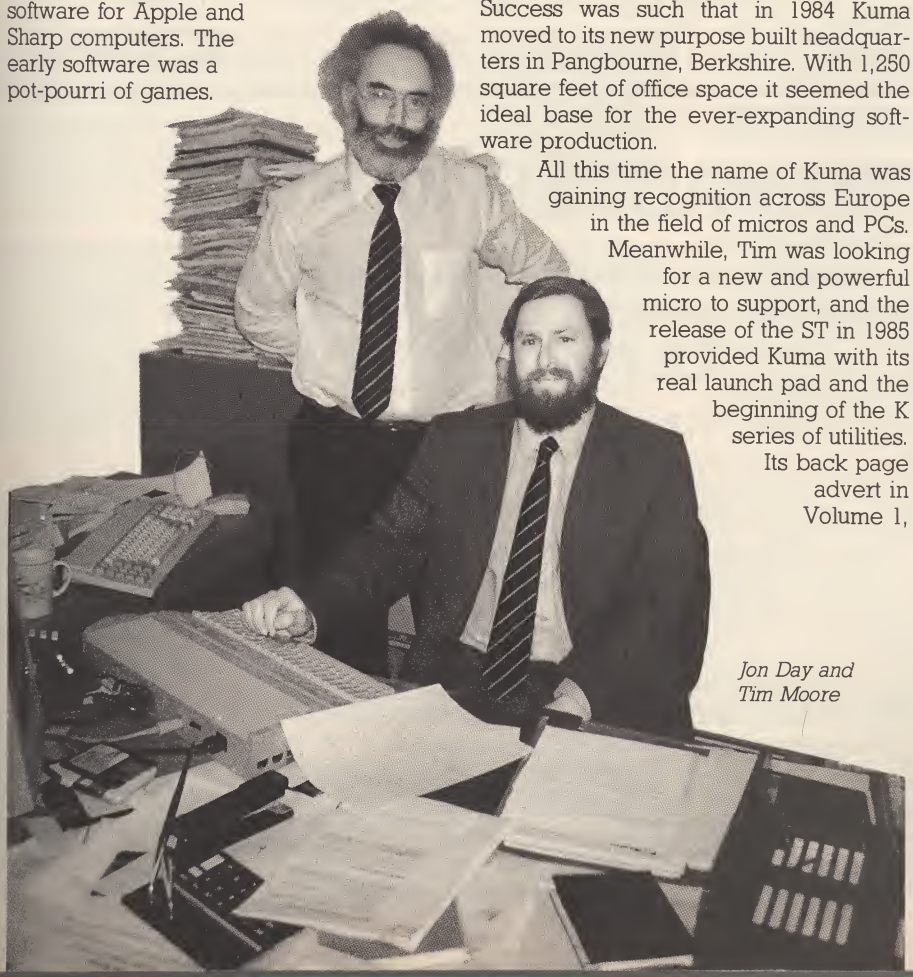
A NAME long synonymous with high quality serious software for the ST is Kuma, a company which shunned the spotlight as it built on many successes to earn a reputation second to none.

The company was formed early in the 1977, when MD Tim Moore and marketing director Jon Day first joined forces. Together they opened New Bear Computer Store – so called because of Tim's nickname, The Bear – in Newbury, with soon to be opened branches in Manchester and Birmingham.

The store retailed electronic components, computer kits, computer books and their own Bear magazines. In addition Jon and Tim began publishing their own commercial software and at one point had more than 15 titles available for the Apple II.

This venture continued successfully until 1982 when both men realised that they could offer more to software development and publishing than to selling peripherals from a few High Street stores.

The shops were sold and Kuma Computers came into existence in a small terraced house in Maidenhead. Stuck between a solicitor's office and an Indian take-away, it began producing software for Apple and Sharp computers. The early software was a pot-pourri of games.



Jon Day and Tim Moore

word processors, spreadsheets and other utilities.

Very soon Kuma was revamping its software for the ever-expanding Sharp MZ700 and writing languages and entertainment packages for the Apricot, MSX and Sirius ranges. Jon and Tim were also responsible at this time for writing the popular arcade game Alien Destroyer for the Sinclair Spectrum.

Book publishing was also proving a profitable sideline, with Mike Shaw's original Psion Organiser becoming an immediate bestseller – it has to date sold more than 50,000 copies. Kuma's second Psion publication went out of print only four days after release.

ST support

Success was such that in 1984 Kuma moved to its new purpose built headquarters in Pangbourne, Berkshire. With 1,250 square feet of office space it seemed the ideal base for the ever-expanding software production.

All this time the name of Kuma was gaining recognition across Europe in the field of micros and PCs. Meanwhile, Tim was looking for a new and powerful micro to support, and the release of the ST in 1985 provided Kuma with its real launch pad and the beginning of the K series of utilities. Its back page advert in Volume 1, Number 1 of *Atari ST User* bears testimony to the fact that Kuma became one of the first companies to produce serious software for the ST. The K-Seka 68000 assembler was a fast and easy to use utility which immediately endeared itself to ST programmers.

K-Ram, written by Rod Pratt, was an immediate best seller. This fast and flexible ram disc utility is still installed on my work disc and is used almost every day of the working week.

As 1986 arrived, Kuma – now employing a staff of six – released the definitive spreadsheet for the ST, K-Spread 1. This still sells in large numbers despite the fact that two more powerful updates – K-Spread 2 and K-Spread 3 – have succeeded it.

K-Word, K-Graph and K-Comm followed and also went through improvements and updates. Kuma prides itself on its no quibbles upgrade service which has kept it at the forefront of the ST market. Jon emphasised that there is always an upgrade either available or in development for nearly all Kuma products.

He further explained that the initial idea behind the exclusive ST K series was to provide a set of business products which would intercommunicate. As such, it would provide the ST businessman with a computerised office framework for a realistic price – well below the Lotus 1-2-3 PC series of business applications.

Since then the series has expanded, with titles such as K-Index and K-Spell and also taken on board other important utilities such as the poets' companion K-Rhyme and the musical composition program K-Minstrel.

1987 brought update versions of the earlier programs and the release of the excellent database manager K-Data, the thesaurus K-Roget and the ram switch program K-Switch. Meanwhile Kuma was expanding its market base into Germany and France and other smaller European countries where the ST was gaining strength.

1987 also saw Kuma making its first conversions of the successful ST K programs for the still plodding Commodore Amiga.

Its work was also becoming more involved in translations of its packages into other languages as their market place spread to encompass Spain, Greece, Denmark, Sweden, Australia, the Middle East and the USA.

Tim had taken the judicious and

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◀ *From Page 61*

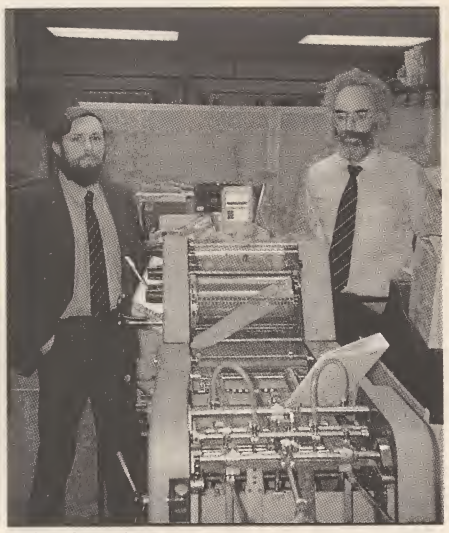
independent step of bringing all parts of the software production process in-house. This included development, writing, duplication of discs, documentation, printing on the company's own K-9 printer and distribution.

At this time the offices were becoming overcrowded – despite an increase in floor space to 2,500 square feet – and Kuma's programmers were becoming increasingly frustrated by continual interruptions caused by the bustling activity around them.

New premises at a secret location in the North of England were acquired and the team of five programmers was secreted away to work on more upgrades and new products. This left Tim and Jon, a team of five packers, various ancillery workers and Karen Carter to deal with despatch and printer June Weller at the Pangbourne offices.

The past year has seen the release of K-Spread 3 – reviewed on Page 45 – and more conversions of the K series for the Commodore Amiga and IBM PC compatibles.

Jon and Tim have just celebrated their 11th birthday in partnership, and Kuma itself has now been in existence nearly seven years. Time perhaps to reflect on the current state of play and to look towards the future. They have ridden the recession of the early 1980s and survived the piracy endemic in the software business.



K-9 – the printer

They recognise the necessity for the serious user to make security back-ups of his master discs. So their answer to the pirates has been to ignore program protection and to concentrate on card registration of product supported by hefty and informative manuals which would cost a pirate a fortune to photocopy.

Currently sitting high in the ST marketplace, Kuma could be excused for bowing out or relaxing, but the opposite is true. While Tim devises the Kuma masterplan for the next two years Jon watches the marketplace and states that Kuma will continue producing top quality serious utilities for the ST. "I like the ST, and we intend to stay with it", he says.

He sees the market as particularly healthy for business and serious utilities, despite Atari's recent policy to bundle the 520STFM as a games machine.

"Many ST users are second generation micro owners and are developing beyond using their machines for games purposes". More and more users are upgrading their STs and increasingly, Kuma is supplying new customers who own 1040 or Mega STs.

Tim Moore views continued growth as important and sees the US market as the next area to crack.

Kuma is developing a new application product for the ST due for release this summer. No details are available, but it promises to shake the market.

This is a company with a close association with the ST and ST users and a company that promises to be with us for many years to come.

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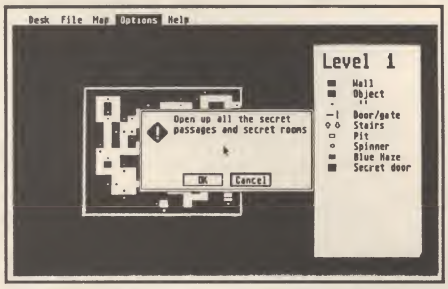

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Conversion factors

THERE are times when a program needs to access a lot of pre-defined information. Consider a utility which converts values expressed in one notation to values expressed in another, for instance, converting metric weights and measures into imperial ones. The conversion in itself is quite straightforward – you simply multiply the figure you wish to alter by a conversion factor.

For instance, one inch is approximately 2.5 centimetres, so the conversion factor you would use to change inches to centimetres would be 2.5. A program to convert inches to centimetres would look something like this:

```
10 INPUT "Inches";i
20 PRINT i;"inches = ";i*2.5;"cm"
30 END
```

However, the conversion factor for each pair of units like metres-miles, pounds-kilograms and so on is different and there are an awful lot of them, so this program is not a very satisfactory solution. A much better way would be to store all the conversion factors in an array.

But the problem remains: How do you get all the numbers into the array in the first place? The obvious solution is to simply set up the array as a series of assignments:

```
10 DIM fac(5)
20 fac(1)=2.5
30 fac(2)=0.3
40 fac(3)=1.2
50 fac(4)=0.2
```

This works OK, but it causes two problems: First, the program is not very clear, which could give rise to errors, and second it is very long winded to write and debug.

Reading data

WHAT is required then, is some simple way of tying all the data together in a simple and organised fashion – a way you, and anyone else, can understand. Basic fortunately, provides a rather elegant solution to this problem, in the form of the related READ, DATA and RESTORE statements.

The syntax of READ and DATA look like this:

```
READ variable [,variable,...]
DATA item1, item2 ...
```

The READ statement is followed by a list of variables and DATA is followed by a list of data items. At first sight this may look very strange, so let's apply it to a program:

```
10 READ count
20 FOR n=1 to count
30 READ name$(n),title$(n)
40 NEXT
.
.
.
1200 DATA 2
1210 DATA "Mark","Mr"
1220 DATA "Jane","Miss"
```

At line 10 READ attempts to assign the first item of data to *count*. The first data item is the number two, so this is the same as saying:

```
count=2
```

The variable *count* is then used to determine the number of loops to be performed by the FOR ... NEXT structure. READ assigns the following items of data to the arrays *name$* and *title$*. The loop continues until exhausted. At first sight this may still seem a little strange. For instance, how does Basic know where the data is? Or, how does it know what values to put in which variables?

The solution to the first problem is very simple. When Basic comes across a READ statement it searches the program from the start until it comes to a DATA statement. This position is then stored internally in a variable called the data pointer. Every time an element of data is read the pointer is incremented by one. So the data pointer always points to the next item of data to be read – not necessarily on the next line.

The second problem is left entirely to the programmer. When Basic tries to assign data to a variable it assumes the variable and data are compatible, and if not this gives rise to a very confusing error.

Consider the following:

```
10 READ name$,age
20 DATA "Freddy",29
```

This is directly equivalent to:

```
10 name$="Freddy"
20 age=29
```

Basically...

WHILE READ and DATA must exist in the same program, there is nothing to tie them together. They are not a looping structure like FOR ... NEXT or a conditional structure like IF ... THEN ... ELSE. In other words, the DATA keyword can exist anywhere in the program as long as it is the first statement on a line.

Basically...

THERE are several schools of thought regarding where data should be placed in a program. Some say at the start, others at the end, others say as close as possible to the lines where it is used. I prefer to organise data at the end of the program – out of harm's way – where it can be added to or amended easily.

```
  10 REM Metric converter
  20 ready=1:count=0:con$=""
  30 WHILE temp$<>"END"
  40 READ temp$,temp
  50 count=count +1
  60 WEND
  70 RESTORE
  80 DIM con$(count),fac(c
ount)
  90 FULLW 2
 100 FOR n=1 TO count
 110 READ con$(n),fac(n)
 120 NEXT
 130 WHILE ready
 140 GOSUB 170
 150 WEND
 160 REM Print list
 170 CLEARW 2
 180 GOTOXY 0,0
 190 RESTORE
 200 FOR n=1 to count
 210 PRINT "(";n;") ";con$
(n)
 220 NEXT
 230 PRINT:INPUT "Selectio
n";choice
 240 IF choice=count THEN
PRINT "Bye":END
 250 IF choice THEN GOSUB
280
 260 RETURN
 270 REM Subroutine to cal
culate conversion
 280 t%=INSTR(0,con$(choic
e)," ")
 290 from$=LEFT$(con$(choi
ce),t%-1)
 300 t%=INSTR(t%+1,con$(ch
oice),">")
 310 result$=RIGHT$(con$(c
hoice),LEN(con$(choice))-t
%-1)
 320 PRINT:PRINT "Convert:
";con$(choice):PRINT
 330 PRINT "Enter number o
f ";from$;
 340 INPUT from
 350 PRINT from;from$;"=";
from * fac(choice);result$
 360 PRINT:INPUT "Press Re
turn to continue...";a$
 370 RETURN
 380 END
 390 DATA "Cms --> Inches"
,0.394
 400 DATA "Metres --> Feet
",3.281
 410 DATA "Kilometres -->
Miles",0.621
 420 DATA "Inches --> Cms"
,2.54
 430 DATA "Feet --> Metres
",0.305
 440 DATA "Miles --> Kilom
etres",1.61
 450 DATA "END",0
```

Read all about it

which is correct. Now consider this:

```
10 READ name$,age
20 DATA 29,"Freddy"
```

This does not work. See if you can work out why for yourself.

Structuring data

THIS brings us to the third point – organisation. A lot can be said about being neat and structured in programming, but there are few cases when this rule applies so strongly as it does in data. The rules are:

- Keep it simple
- Group related elements together whenever possible

If you follow these guidelines you will find programs are more likely to work first time and are easier to debug if they do go wrong.

Data organisation can be seen in the example listing. This is a program to convert metric measurements to imperial and back again. Don't enter it just yet, but consider the way the data has been arranged:

```
400 DATA "Metres --> Feet",3.281
410 DATA "Kilometres --> Miles",0.621
420 DATA "Inches --> Cms",2.54
```

Each DATA line consists of two items. First there is a text string which is used to form part of an options menu. Alongside it is the conversion factor itself. In this way you can see which conversion applies to which factor. Likewise you can add more conversions very simply. Now let's assume the data had been set out like this:

```
400 DATA "Metres --> Feet"
410 DATA "Kilometres --> Miles"
420 DATA "Inches --> Cms"
430 DATA 3.281,0.621,2.54
```

In this case the program would have to be amended to account for the different layout. All the same, the data does not mean an awful lot – it is just strings of text and meaningless numbers.

Before leaving the subject of data there is one other command, without which most programs would be very hard, if not impossible, to write. As has already been said, the data pointer is incremented by one every time an item of data is read. When Basic runs out of data – the pointer runs past the end of the program – it prints the message *Out Of Data*.

If you want to read the same data more than once you must reset the pointer back to the beginning. This is done with the RESTORE instruction. There are two ways of using it – to start reading the data from the beginning simply use RESTORE, but to start reading at a particular line number use something like RESTORE 2000 where 2000 is the line number.

It is important to remember that you can only restore to the start of a line, but Basic's data pointer can be anywhere along a line.

New sets of data must therefore always start at a new line.

Let's now consider the metric conversion utility. There are two ways of looking at this: Experts would call it contrived, beginners complex and know-it-alls elegant. In fact it has elements of all three. As a program it illustrates many of the points already discussed and brings in a few new ones. Most interestingly though, it is expandable.

It makes use of a simple set of data and a few rules to ensure the data can be expanded easily. When run, it presents a menu of seven items, six of which are the conversions and the seventh a neat exit to Basic. New conversions can be added between lines 440 and 450, and these will be included automatically. You should always aim to make your programs expandable like this if possible.

Here is how it works: Lines 10-60 set up the program and count the number of data elements. Lines 70-80 reset the data pointer and dimension the arrays. Lines 90-150 read the data in to the arrays. Lines 160-260 print the menu of options. Lines 270-370 calculate the conversion. Lines 390-450 contain the data.

The conversion routine makes use of some string slicing to make the program's output more interesting. As an exercise see if you can work it out for yourself.

Handling data

TO further illustrate the use of READ and DATA here is a short program that prints anagrams on the screen. It prompts you to solve it and enter the correct word:

The bulk of the listing is fairly simple, but there are a few lines that may require a bit of thought to work out what is going on. The words are stored in data statements at the end of the listing and they are preceded by a single data item indicating the number of words present.

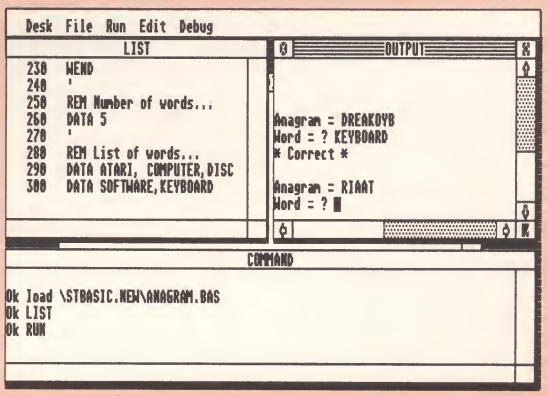
The first task the program performs is to read the number of words into the variable *n%*. Two arrays are then dimensioned – one for the word (*word$*) and one for its anagram (*w$*). A FOR ... NEXT loop reads each word into *word$* and another FOR ... NEXT loop scrambles a copy of it in *w$*.

Lines 100 and 110 are quite complex. The first picks a letter in the word at random and the second puts it at the front of the word. This process is carried out 10 times and the result is that the letters become scrambled.

The WHILE ... WEND loop towards the end of the listing picks a word at random and prints its anagram.

Your guess is compared to the word and the appropriate message is printed via an IF ... THEN ... ELSE statement.

```
 10 REM Anagrams
 20 '
 30 REM Initialise
 40 READ n%
 50 DIM word$(n%),w$(n%)
 60 FOR i%=1 TO n%
 70 READ word$(i%)
 80 w$(i%)=word$(i%)
 90 FOR j%=1 TO 10
100 p%=1+INT(RND*LEN(w$(i
%)))
110 w$(i%)=MID$(w$(i%),p%
,1)+LEFT$(w$(i%),p%-1)+MID
$(w$(i%),p%+1)
120 NEXT
130 NEXT
140 '
150 REM Print anagrams
160 CLEARW 2
170 WHILE NOT bored
180 PRINT
190 p%=1+INT(RND*n%)
200 PRINT "Anagram = ";w$
(p%)
210 INPUT "Word = ";guess
$
220 IF guess$=word$(p%) T
HEN PRINT "* Correct *" EL
SE PRINT "* Wrong *"
230 WEND
240 '
250 REM Number of words..
260 DATA 5
270 '
280 REM List of words...
290 DATA ATARI, COMPUTER
300 DATA SOFTWARE,DISC
310 DATA KEYBOARD
```



The output from Anagrams

Getting into spreadsheets

A simple price list

SO far we have looked at the basic principles of spreadsheets and how they can prove invaluable for small business purposes. Now we will take the next important step and observe in more depth how you can make these electronic accounts sheets work for you in given situations.

Most spreadsheets for the ST work in similar ways, but they all have their own quirks and exclusive peculiarities. To explain some simple operations and calculatory functions we will use Glentop's Graphic Sheet and Kuma's K-Spread 3 as our working examples of spreadsheets in action.

To give you an idea of the saving in time – time is money in business – and effort that a spreadsheet and ST can bring, we'll work through a couple of simple examples.

Any ST spreadsheet will allow you to construct a price list like that shown in Figure I, instantly to calculate VAT and mark-up which can be constantly updated. Bear in mind however, that the actual mechanics for doing so will vary slightly depending on which sheet you use. For simplicity we will temporarily ignore VAT and look at how, using K-Spread 3, the price list was made up.

The first stage is to boot up the spreadsheet which should load with the edit cursor – the small oblong box – located in the top left hand corner of the sheet (cell A:0). Now your first tasks are fairly simple as you enter the column headings along row number one, pressing the right arrow after each heading has been entered.

However, you will notice that the heading Part Number partly disappears as you enter the next heading Title. This is because the first label was too long for the default width of the cell, so you will need to widen cell A:0.

This is a simple procedure: Locate the mouse arrow on the bottom right hand corner of A:0 and press the Alt and left mouse keys simultaneously. Now drag the arrow towards the right, release the key and the cell will have been widened to accommodate the words Part Number.

Now you are ready to enter the part numbers. To save typing time, sequential part numbers can be generated automatically using a FILL command in K-Spread 3's Options Menu.

To do this, select Fill Range from the Options menu. Choose the range of cells that you wish to fill by entering the parameters A1:A10 into the Range Dialogue box – shown in Figure II.

Now click on OK and Select Fill by Column by clicking on the downwards facing arrows. Choose the starting and finishing points of the part numbers, in this case 1001 and 1010, then select an increment of one. This procedure can be clearly seen in Figure II. The incremental part numbers will now be displayed in column A, rows 1-10.

The next important step is to set up a template for generating the price list. You will see at first hand the calculatory speed and power of an ST spreadsheet as it automatically works out selling prices as cost prices are entered.

The percentage mark-up should be entered into cell D1. For this example we assume the mark-up to be 50 per cent, so 1.50 – one whole plus 50 per cent – is entered into cell D1. The mark-up is standard across the product range, so this figure can be copied down the mark-up column.

To do this, select cell D1 by clicking on it and then drag it to the column header. Enter into the Range Dialogue the parameters 1:10 and press Return. The markup 1.50 will now be copied to the relevant range.

Now you must set up the formula to perform the calculations, the object being that the spreadsheet automatically works out the selling price in column E by multiplying the cost by the mark-up.

Next enter some sample prices into column C1 and enter the calculatory formula C1*D1 (cost times mark-up) into cell E1.

The formula can be copied down the sheet by selecting and dragging the cell onto the column header, entering

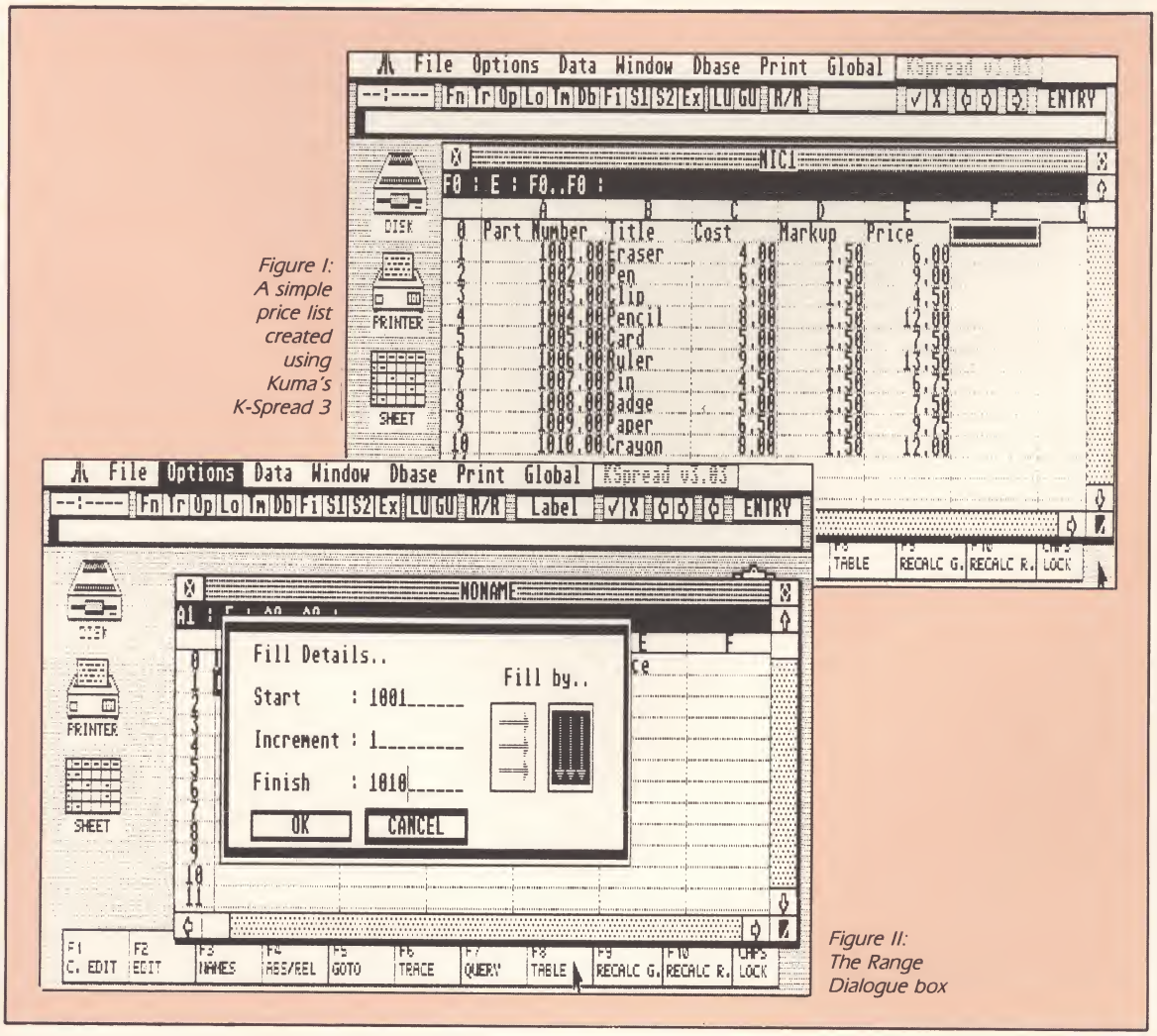


Figure I: A simple price list created using Kuma's K-Spread 3

Figure II: The Range Dialogue box

Getting into spreadsheets

the range as before and pressing Return. The formula will automatically alter to multiply correctly across each row, giving you a sale price from the cost entered in column C.

This is a fairly simple example of the calculatory powers of an ST spreadsheet. To include VAT mark-up as well, you only need to add an extra column – say in column E, forcing Price into column F – of VAT mark-up of 1.15. Then a formula of C1*D1*E1 would give the extended calculation to give a new sale price in column F.

An expenses ledger

A SIMPLE expenses ledger like the one shown in Figure III can be set up by using some of the principles already discussed. Using Graphic Sheet you can construct a ledger template. The column and row headings can be entered in a similar fashion to the way we entered them for the price list. The only difference being with Graphic Sheet you must press Return after each entry.

Then the relevant expense figures for each category in each month can be entered as and when desired. Referencing a range of cells, your sheet can calculate total monthly expenses at the end of each column and total category expenses at the end of each row.

This is done by setting a formula for a range of cells. For instance, the sum of all cells included in January is delimited by the range R3C3 (row 3, column 3) to R9C3 (row 9, column 3). With Graphic Sheet it can be written like this =SUM(R3C3:R9C3), the character : indicating a range. The formula will successfully be applied to January and will give a total for monthly expenses in the desired cell, in this case cell R11,R3.

This same formula can be dragged with your mouse on to the other 11 months and copied to calculate the totals for those months. A similar formula can be constructed for the rows to show category totals at the end of each row.

Keeping track of your bank account

IT is also possible quickly to produce a sheet to keep an eye on your current or business bank account. The spread in Figure IV gives an indication of the type of simple check that can be made. Enter the heading details as before, in the same manner as they are produced on your bank statement.

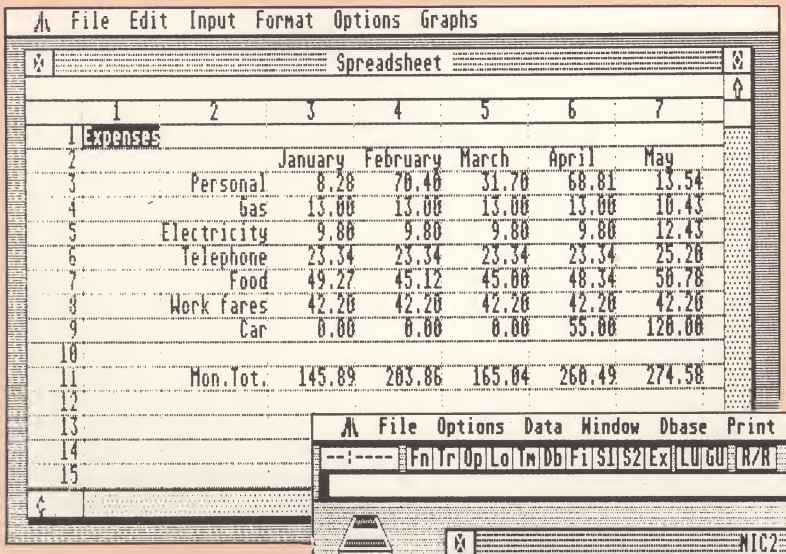
Now you must predefine the date display in column A. Like most other ST spreadsheets, K-Spread 3 allows you to set up the sheet in advance in readiness for data to be added later. The date may be primed as a label by selecting Preformat from the Data menu and by clicking on the create button. Follow a simple on-screen procedure and any data entered into column A will be converted automatically into date format.

Column B can be preformatted in much the same way – this time as labels. Columns C and D – the credit and debit columns – will be numbers, therefore no previous formatting is necessary as spreadsheets automatically recognise numbers.

In column E, row 1 will be the balance brought forward. From Row 2 onwards we can set up a formula to automatically calculate the balance when a new credit or debit is entered.

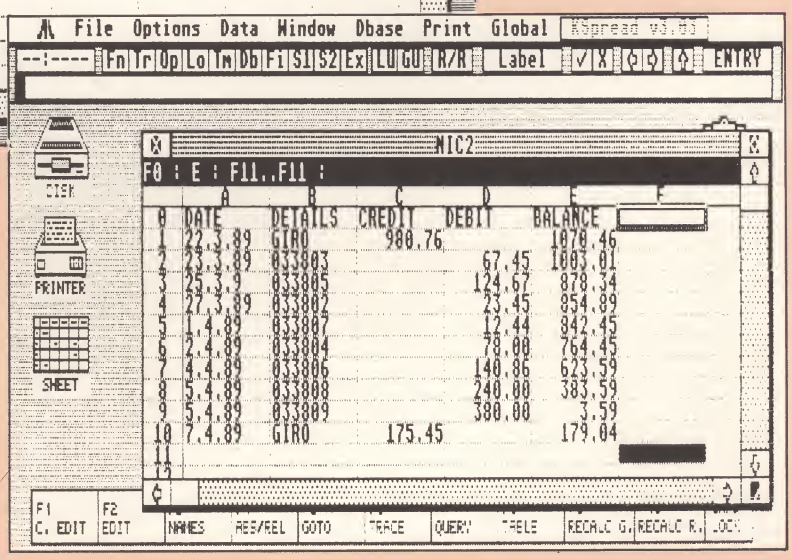
In this case the formula would be IF(C2-D2<>0 THEN E1+(C2-D2)ELSE'' ''). To avoid entering the formula many times, it can be copied down column E by dragging cell E2 to the column header and setting the range as before. Now you have a powerful bank statement manager which can be updated automatically at any time as credits and debits arise.

The above examples are just the tip of the iceberg, but will give you the inside knowledge to begin making practical use of your spreadsheet for important business purposes.



	1	2	3	4	5	6	7
1	Expenses						
2			January	February	March	April	May
3		Personal	8.28	70.40	31.70	68.81	13.54
4		Gas	13.00	13.00	13.00	13.00	10.43
5		Electricity	9.80	9.80	9.80	9.80	12.43
6		Telephone	23.34	23.34	23.34	23.34	25.20
7		Food	49.27	45.12	45.00	48.34	50.78
8		Work fares	42.20	42.20	42.20	42.20	42.20
9		Car	0.00	0.00	0.00	55.00	120.00
10							
11		Mon.Tot.	145.89	203.86	165.04	260.49	274.58
12							
13							
14							
15							

Figure III: An expenses ledger created using Glentop's Graphic Sheet



	A	B	C	D	E
0	DATE	DETAILS	CREDIT	DEBIT	BALANCE
1	22.3.89	GIRO	980.76		1070.46
2	23.3.89	033803		67.45	1003.01
3	25.3.9	033805		124.67	878.34
4	27.3.89	033802		23.45	854.89
5	1.4.89	033807		12.44	842.45
6	2.4.89	033804		78.00	764.45
7	4.4.89	033806		140.86	623.59
8	5.4.89	033808		240.00	383.59
9	5.4.89	033809		380.00	3.59
10	7.4.89	GIRO	175.45		179.04
11					
12					

Figure IV: A flexible bank statement which can be automatically updated

Floating point variables

Printing numbers

WE have looked at several different variable types commonly used in C programming, but two we haven't really explored in any depth are floating point variables and numbers. High level languages like Basic handle them just like ordinary integers and you can usually manipulate floating point variables and numbers without changing your program significantly.

Many Basics like ST Basic distinguish integers from floats – sometimes called real numbers – by appending a per cent sign to the variable name. So *num%* would be an integer or whole number but *num* would be a float or real number. STOS Basic is unusual in that it assumes you are using integers and you must append a hash sign to indicate a real number.

Unlike Basic, in C programming we don't use a per cent or hash sign, but we do have to tell the compiler which variables in our program are integer and which are floating point. This is done by defining the variables at the start of *main()* or in whatever function they are used like:

```
float height;
double length, width;
```

The first example defines the variable *height* as being a floating point number. The second example defines *length* and *width* as being double precision floats – meaning you can have more digits after the decimal point, hence a greater degree of accuracy.

To demonstrate the use of this new type of variable here is a short program which prints out the numbers up to 10 along with their square roots:

```
/* Floating point output */
/*    Mark Williams C    */

#include <stdio.h>
#include <math.h>

main()
{
  float n,r;

  printf("Number.....Root\n");
  for ( n=1; n<11; n+=1 ) {
    r = sqrt(n);
    printf("%f = %f\n",n,r);
  }
}
```

This is written using Mark Williams C, an expensive but comprehensive C development system. In past example listings the budget-priced GST C was used, and while this is excellent for most tasks its one main drawback is that it can't handle floating point arithmetic. Decimal numbers are out and you are restricted to whole numbers – which, in practice, is rarely a handicap.

Some compilers, Mark Williams for instance, require that you specifically tell it to include its floating point routines into the final code. If you forget to do so when compiling the source code confusing error messages may be displayed, as it assumes you are using integer maths throughout.

The compiler command line for Mark Williams is:

```
cc -f program1.c -lm
```

The –f tells the compiler to include the floating point *printf()* function instead of the standard one. The reason it is not normally included is that it requires extra code, thus making the program slightly bigger. The –lm at the end tells the linker to link in the maths library as we call a built-in function called *sqrt()* to calculate the square root.

In addition to this, the maths library must be included in the compilation process with an *include* command at the start of the listing.

A further point worth noting is that some C compilers insist that you include a decimal point when assigning a value to a floating point variable like:

```
n = 5.0 * 6.0
```

and not:

```
n = 5 * 6
```

You'll notice from the listing (and the output if you enter and run this program) that the variable *n* runs from 1 to 10 in steps of one, and only whole numbers are used. You might think that *n* could therefore be defined as being an integer, but if you try it all the square roots come out as being zero. What has happened is that the function *sqrt()* expects a float to be passed to it as a parameter and you provide it with an integer. It gets confused and assumes it's a float with a value of zero.

Finally, take a look at the *printf()* function. You'll see that it includes the %f conversion specification. This instructs the print routine to place a floating point number at this point in the string being output.

We can add a couple of parameters to this – placed between the per cent and the f – to tell it how many decimal places to print and how much space it has got. For instance,

Numeric output

SO far we have looked at ways of inputting numbers into our C programs, and this has involved entering a string and then converting the Ascii characters into a number. Although we have also seen how to output numbers using the *printf()* function, it is good practise to have a go at writing your own output routine.

One method involves the reverse process – converting the number into a string and then printing this character by character:

```
printd(n)
int n;
{
  char string[10];
  int i;
  i = 0;
  while ( n > 0 ) {
    string[i++] = (n % 10) + '0';
    n /= 10;
  }
  while ( i >= 0 )
    putchar( string[i--] );
}
```

This function can be called with something like *printd(12345)* and it will print the number on the screen. It works by successively dividing the number by 10 and storing the digits in a character array. When the number reaches zero the string is complete, but unfortunately the digits are in reverse order. A *while* loop is used to output the characters and *putchar()* directs them to the screen.

You might think that this is a fairly compact and efficient routine, but in fact, it can be made much simpler and shorter by implementing it as a recursive function:

```
printd(n)
int n;
{
  if ( n > 9 )
    printd( n/10 );
  putchar( (n % 10) +'0' );
}
```

This new version of *printd()* is only possible because of the way C implements local variables each time a function is called. If the number passed to *printd()* is greater than nine it repeatedly calls itself and divides the number by 10 until it gets a number small enough to print.

Floating point variables

%5.2f would mean print the floating point number in a space five characters wide – padding out with spaces if it's smaller – with just two digits after the decimal point.

For a much neater output alter the *printf()* function so that it reads:

```
printf("  %2.0f  =  %4.2f\n",n,r);
```

The maths library header MATH.H is a simple C listing that defines a few constants and informs the compiler that certain maths functions will be used. The only task it performs in our program is to tell the compiler that the function *sqrt* returns a double precision floating point number.

By default, all functions return integer results so a *double sqrt ()* at the start of the listing must be entered.

Inputting floats

WE have examined several input routines for entering strings and integer values, and now it is time we saw how to enter decimal numbers into floating point variables. What we'll do is to input the number as a simple string, and once it is safely stored in memory we'll convert it into a number. We've seen the string input routine before, so let's not dwell on that. Here is the function which converts that string into a real number:

```
double getfloat(s)
char s[];
{
  int i;
  double n,fact;
  n = 0.0;
  for ( i=0; s[i]!='.'; ++i )
    n = n*10.0 + (s[i]-'0');
  fact=0.1;
  ++i;
  while ( s[i]!='\0' ) {
    n = n + fact*(s[i++]-'0');
    fact = fact/10.0;
  }
  return(n);
}
```

The function is called *getfloat()* and the string is passed as a parameter. The function returns a floating point number so it must be defined as being either a float or – as in this case – a double (float). If you don't do this the compiler will assume the result returned by the function is an integer and you'll end up with a nonsense value for the input.

The function is in two parts. The first half works out the value of the whole number part of the input and the second half calculates and adds the decimal digits. Here is the routine incorporated into a simple program:

```
/*    Floating point input    */
/* Written in Mark Williams C */

#include <stdio.h>

main()
{
  char string[20];
  double number , getfloat();
  input(string);
  number = getfloat(string);
  printf("Number = %f\n",number);
}

input(s)
char s[];
{
  int i,c;
  for ( i=0; (c=getchar())!='\n'; )
    s[i++] = c;
  s[i] = '\0';
}

double getfloat(s)
char s[];
{
  int i;
  double n,fact;
  n = 0.0;
  for ( i=0; s[i]!='.'; ++i )
    n = n*10.0 + (s[i]-'0');
  fact=0.1;
  ++i;
  while ( s[i]!='\0' ) {
    n = n + fact*(s[i++]-'0');
    fact = fact/10.0;
  }
  return(n);
}
```

What this doesn't allow for is negative numbers, so you might like to modify the function to cope with this situation. All you need to do is examine the first character and set a flag if it is a minus sign. If one is found return *–n* instead of *n*.

Register variables

THERE is a special type of variable available to C programmers called a register variable. Normally variables are allocated space in memory to hold their name and value, the amount of space depending of the length of name and type of variable, such as integer, float or string.

However, register types are completely different in that they make use of the 68000 processor's internal registers to hold the variable's value. This imposes certain restrictions on its type, but the advantage is that they can be accessed at lightning speed.

The only data type available in register form is integer, as the 68000 chip's registers can't manipulate floating point numbers. Also only a limited number of registers is available so this too, places a limit on the number you can define in your program. It is best to reserve them for speed sensitive parts of your code and to restrict them to very heavily used integer variables.

To convert an ordinary integer to the register type simply precede its definition with *register*. To demonstrate their use the following short program takes 20.93 seconds to execute:

```
/* Speed test */

#include <stdio.h>

main()
{
  int i , j;
  for ( i=0; i<20; ++i )
    for ( j=0; j<30000; ++j ) ;
}
```

If, however, we insert the *register* command before the *int* like:

```
register int i , j;
```

execution time is reduced to 13.23 seconds – around two thirds of the original time and quite a significant saving.

Putting theory into practice

Multiple windows

WE have learnt a fair bit of theory about Gem windows, so now let's put that theory into practice with an example listing. What we'll do is to define and open five overlapping windows on the ST's screen. A filled circle is then drawn inside each one and is clipped using the *wclip* function. You can then successively remove each window from the screen by clicking on the left mouse button.

The program below has been designed to run in monochrome, and if run in other resolutions some of the windows may be off the screen. Also the GEM.H include file from page 10 in this section is required in order to define some functions used by the program.

Changing a window's size

ONCE a window has been successfully installed into the ST's memory its size and position can easily be changed using an option from the *wind_set* function. We first encountered this function during the window initialisation process, when it was used to set the title and information line of a window. As before, the format of the *wind_set* function is:

```
r=wind_set(whandle,option,I1,I2,I3,I4)
```

where *r* is a number returned by *wind_set*. A value of zero indicates that an error of some sort has occurred.

The *whandle* parameter is the handle of the window we want to change and *option* is the number of the function we wish to call. In this case, we will be using option number five.

The variables *I1* and *I2* hold the new screen coordinates of the window and *I3* and *I4* contain its new size. The call to change a window's size can be performed with:

```
r=wind_set(whandle,5,x,y,w,h);
```

Note that *x, y, w* and *h* refer to the total coordinates of the new window. If the working coordinates are required, they will need to be calculated in the normal way using the *wind_calc* function.

Window manipulation

THE AES automatically takes care of many of the more arduous aspects of window management. Whenever you click on the size box of a window a resizable outline is displayed on the ST's screen. Similarly, clicking on the move bar generates a hollow box which can be dragged around to change the window's position. These movements are controlled directly from the AES.

It is important to realise, however, that the results of these actions need to be dealt with explicitly by your own program.

The AES only informs you that the user has requested an action – it does not perform that action itself. So if a window is moved or resized its dimensions will need to be changed using an immediate call to the *wind_set* function in your program.

Events

A SPECIAL mechanism is provided by the AES to allow you to control the various parts of the Gem system. It takes the form of a series of commands which wait for a specific event to occur. Most of these events are generated

```
/* Multiple Windows  */

/* Include Files */

#include <stdio.h>
#include <gem.h>

/* Global Arrays */

/* Storage for window coordinates */
int windo[8],wx[8],wy[8],ww[8],wh[8];
/* Storage for window titles */
char wtitle[8][12];

/* Variables */
int x,y,h,w,i,j,s;

main()
{
/* Initialize GEM */
  gem_on();

/* Open 5 windows */
for (i=0;i<5;i++)
{
 /* Set position of window */
 wx[i]=10+i*20;   wy[i]=40+i*40;
 ww[i]=200;       wh[i]=150;
 /* Initialize window title */
 sprintf(wtitle[i]," Window %d",i);
 /* Open a window */
 windo[i]=windopen(i,wtitle[i]);
 /* Draw filled clipped circle */
 redraw(i);
}

/* Close 5 windows */
for (i=0; i<5; i++)
{
/* Read Mouse buttons */
s=click();
windclose(windo[i]);
}
/* Kill GEM */
   gem_off();
}


/* Function to open a window */
int windopen(n,title)
int n;
char *title;
{
 int wr,whandle;
 int xs,ys,ws,hs;
/* Calculate exterior size of the
   window specified by x,y,w,h */
 wr=wind_calc(0,NAME,wx[n],wy[n],
ww[n],wh[n],&xs,&ys,&ws,&hs);
/* Create a window with a title */
whandle=wind_create(NAME,xs,ys,ws,hs);
 if (whandle<0) return(0);
/* Set window name to title */
 wr=wind_set(whandle,2,title,0,0);
/* Open window */
 wr=wind_open(whandle,xs,ys,ws,hs);
return(whandle);
}

/* Function to close a window */
windclose(w)
int w;
{
 int wr;
 if (w>0)
 {
 wr=wind_close(w);
 wr=wind_delete(w);
 }
}

/* Function to clear a window */
clearw(n)
int n;
{
int coord[4];
coord[0]=wx[n];
coord[1]=wy[n];
coord[2]=wx[n]+ww[n]-1;
coord[3]=wy[n]+wh[n]-1;
vsf_color(handle,0);
vr_recfl(handle,coord);
}

/* Function to clip a window */
wclip(w)
int w;
{
int coord[4];
coord[0]=wx[w];
coord[1]=wy[w];
coord[2]=wx[w]+ww[w]-1;
coord[3]=wy[w]+wh[w]-1;
vs_clip(handle,1,coord);
}

/* Redraw a window's contents */
redraw(w)
int w;
{
wclip(w);  /* Clip window */
clearw(w); /* Clear window */
/* Draw circle */
vsf_color(handle,1);
v_circle(handle,wx[w]+ww[w]/2,
wy[w]+wh[w]/2,100);
}
```

Putting theory into practice

by an input of some sort.

Typical events include:

- *Keyboard event* – a character has been typed in at the keyboard.
- *Time event* – the AES waits until a certain amount of time has elapsed.
- *Mouse event* – the mouse has been moved into or out of a rectangular area. This feature is occasionally used to construct customised dialogue boxes, such as HiSoft's file selector.
- *Mouse button event* – one or both of the ST's mouse buttons has been clicked.
- *Message event* – the user has manipulated a window or accessed one of the Gem menus.
- *Multiple event* – checks for a whole list of events. This can comprise of any of those above.

The AES incorporates separate functions for each of the possible events. So if you wanted to ask the AES to wait for a keyboard event, you could call the *evnt_keybd* function like this:

```
key=evnt_keybd();
```

where *key* is just the Ascii code of the key which has been pressed.

We'll now look at the *evnt_mesag* routine which waits for the manipulation of a Gem window. The format is:

```
evnt_mesag(message);
```

Here *message* is an array of eight integers which will contain the results of the function. This array must have been previously defined in your program with a line like:

```
int message[8];
```

The *evnt_mesag* function returns one of a number of messages which indicate the specific event which has been detected. The nature of the message can be found in *message[0]*.

Here is a list of some of the events which can be generated by a Gem window, along with the expected results:

Message number 21: WM_TOPPED

A topped message is produced when a new window is selected with the mouse and *message[3]* contains the handle of the new window to be activated. The *wind_set* command provides a special function to activate this:

```
wind_set(whandle,10,0,0,0,0)
```

where whandle is the handle of the window which has been chosen.

Message number 22: WM_CLOSED

This code is returned whenever the mouse is clicked on the Close box of a window and *message[3]* holds the handle of the window to be closed. Your program should handle this event by closing the window using *wind_close* and possibly deleting it from memory with *wind_delete*.

Message number 23: WM_FULLED

This message is generated when the mouse is clicked on the Full box of the window and *message[3]* contains the handle of the window to be fulled. This event can be performed by changing the size of the window to the maximum possible dimensions using the *wind_set* command.

Message number 27: WM_SIZED

The size box has been used to request a new size for the current window. This must be accomplished directly from your program with a call to *wind_set*.

Return values: *message[3]* contains the handle of the window to be resized, *message[4]* is the current X coordinate of the window, *message[5]* is the current Y coordinate, *message[6]* is the new width of the window and *message[7]* is the new height of the window.

Message number 28: WM_MOVED

The move bar has been dragged to reposition one of the windows. This needs to be implemented using an explicit call to *wind_set* in your program.

Return values: *message[3]* contains the handle of the window to be moved, *message[4]* is the new X coordinate of the window, *message[5]* is the new Y coordinate, *message[6]* is the current width of the window and *message[7]* is the current height.

The standard way of dealing with these messages is to place all the code into a simple loop. This can be summarised by the following steps:

- Wait for a message event (call *evnt_mesag*)
- Check for each of the possible window events. The precise events which need to be tested will vary depending on your current window definition. These tests are normally implemented using the *switch* statement.
- If all the windows have been closed jump back to your main program, otherwise the first two steps should be repeated.

Window Control

THE basic principles of controlling a Gem window are best demonstrated with an example. Look at the following *window_control()* routine:

```
window_control()
{
/* Assumes that:
 full = global integer variable.
 message = global array of 8 integers.
 Calls the functions redraw,
 window_move, and window_full.
 These need to be defined separately.
*/

/* Define Storage */
int open,whandle,option;
/* Continue until window closed */
open=1;
/* Set flag denoting the status
   of current Window */
full=0;
/* Wait until something interesting
   happens */
 do
 {
 evnt_mesag(message);
 option=message[0];
 whandle=message[1];
 switch(option)
 {
 case WM_TOPPED:
 wind_set(whandle,10,0,0,0,0);
 break;

 case WM_FULLED:
 window_full(whandle);
 redraw(whandle);
 break;

 case WM_SIZED:
 case WM_MOVED:
 window_move(whandle);
 redraw(whandle);
 break;

 case WM_CLOSED:
 open=0;
 break;
 }
 }
 while (open);
}
```

Note that this function is only intended as an illustration, and should not be run in isolation. It includes calls to a number of window management functions which we will be looking at next.

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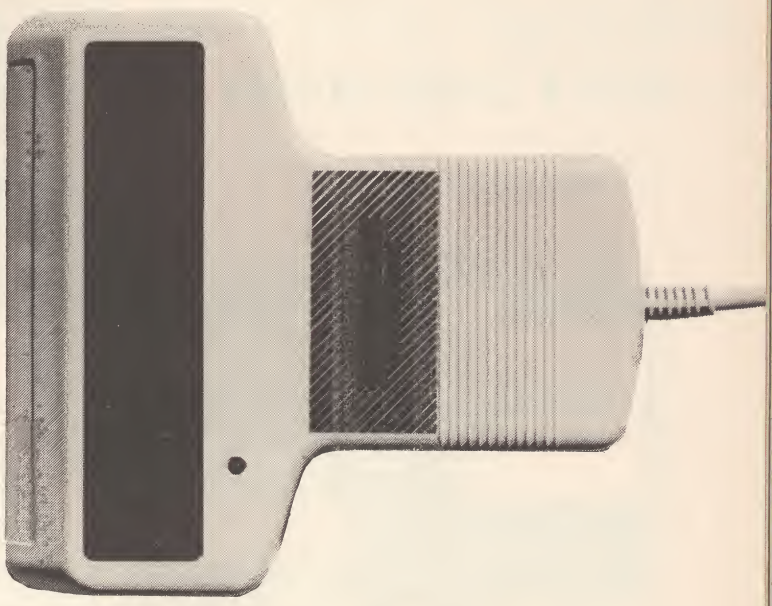


Roland Waddilove tries a flexible new hand held scanner and comes up with some impressive results

A SCANNER is a hardware add-on which, when combined with the right software, will enable you to pick up pictures from photographs, newspapers, magazines and so on, and display them on the ST's monitor screen. Once the image is in the micro it can be manipulated like any other picture using an art package.

We looked at the budget-priced IMG scanner in the June 1987 issue of *Atari ST User*. That cost just under £100 and the only criticism was that it was very fiddly to use and set up.

Daatascan from Kempston costs two and a half times as much, and also has the distinction of being hand held. At £247 it isn't cheap by any means, but compared to some other scanners on the market it is still at the budget end of the scale.

The package consists of the scanner itself, a cartridge and power supply, a disc of software and Atari's new Hyperpaint art package. The cartridge is pretty standard except for two sockets – one for the power supply and the other for the scanner. The scanner is T-shaped and measures about 6in by 6in.

After plugging in the hardware and booting up the software you are presented with a blank Gem window with a group of four icons in the bottom left corner of the screen. A menu bar sits at the top.

Clicking on the top left icon or Scan on the file menu activates the scanner. You place it on the picture to be scanned and drag it slowly toward you while holding down a button on the left hand side of the case.

The picture is immediately transferred to the screen and you can see it building up in real-time. The screen dumps show the sort of results you can expect. The quality is excellent and the whole package is very easy to use. You can alter the intensity of the image by rotating a small wheel on the right hand side of the scanner and four sets of patterns used to build up the picture can be selected using a four-position switch on the scanner's side.

Having got the image into the micro, the screen then acts as a window on to it, which can be scrolled using the slider bars to reveal the rest of the picture. The whole image can be saved to disc in IMG format, or you can cut a section from it using a rubber banded box and save this instead.

You can load images as well as saving them. The Special menu options enable you to convert the top left corner of the image into a Degas or Neochrome picture. Unfortunately, it's not possible to save the whole image this way as it is many times larger than the screen. What you must do is cut a screen-sized chunk from the image, save it, reload it, then convert it to Degas or Neochrome.

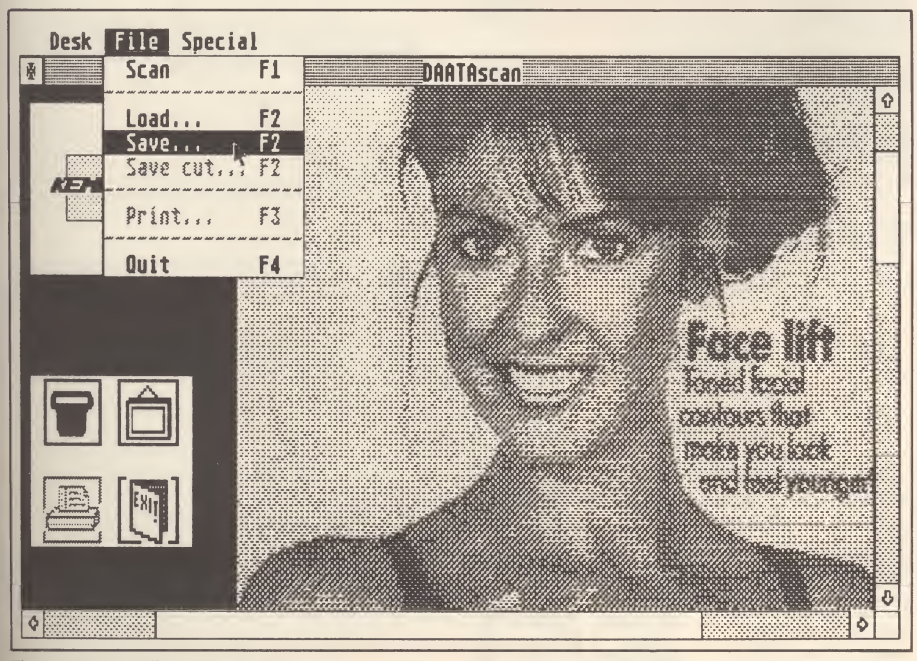
There's also a built in print facility – available by clicking on the printer icon – but I found the output to be rather poor. However, you can use Hyperpaint, which produces excellent results instead.

The image in memory can be reduced by either 50 or 75 per cent by pressing F5 to F10. You can press a key again to reduce it further. The results of this operation are variable – sometimes the image is preserved, sometimes it fades to either white or black.

Hyperpaint is the perfect companion to Daatascan as it is one of the few art packages that can load IMG files. The only problem is that you can't load a full size image into a 520ST due to lack of memory. You must cut it using Daatascan then load the cut section. No such problems occurred using a Mega 2 ST.

Having to cut the images isn't a prob-

Turn to Page 80 ►



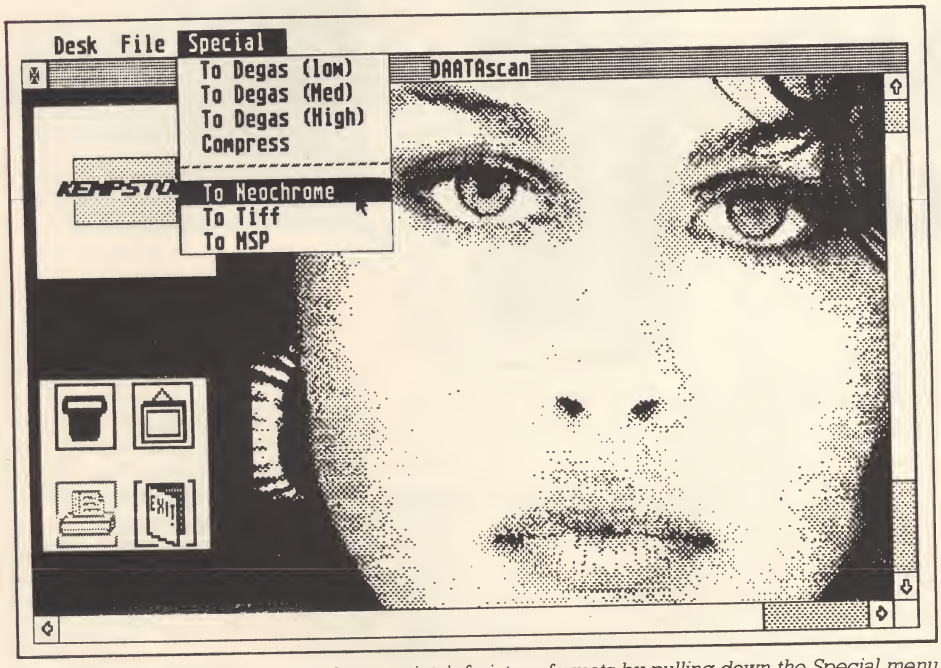
The options available on the File menu

◀ *From Page 79*

lem as it is quite likely that only small sections of the original scan will be required anyway. I won't say any more about Hyperpaint as it was reviewed in last month's *Atari ST User*.

Also provided on the Daatascan disc is a utility for manipulating low resolution scanned images saved in IMG form. It allows you to load IMG picture files, save them in Neochrome or Degas form, resize and recolour them, change selected pixels' colours and so on. The software isn't Gem-based, though it is mouse controlled for ease of use.

Daatascan is a quick and easy way of building up clip art for DTP packages, drawings for artwork, sprites and backgrounds and so on. The software works in all screen resolutions and the scanner is a doddle to use. After just two or three minutes' practice you'll be scanning everything in sight. I can thoroughly recommend Daatascan.



Scanned images can be converted to a variety|of picture formats by pulling down the Special menu

FACT FILE

Product: Daatascan
Price: £247
Supplier: Kempston Data, 21 Linford Forum, Linford Wood, Milton Keynes MK14 6LY.
Tel: 0908 677886

POINTS FOR:
Very easy to use. Produces good quality images. Hyperpaint thrown in too.

AGAINST:
Intensity wheel is easy to knock when scanning a picture.

COMPETITORS REVIEWED:
IMG Scan, June 1988.

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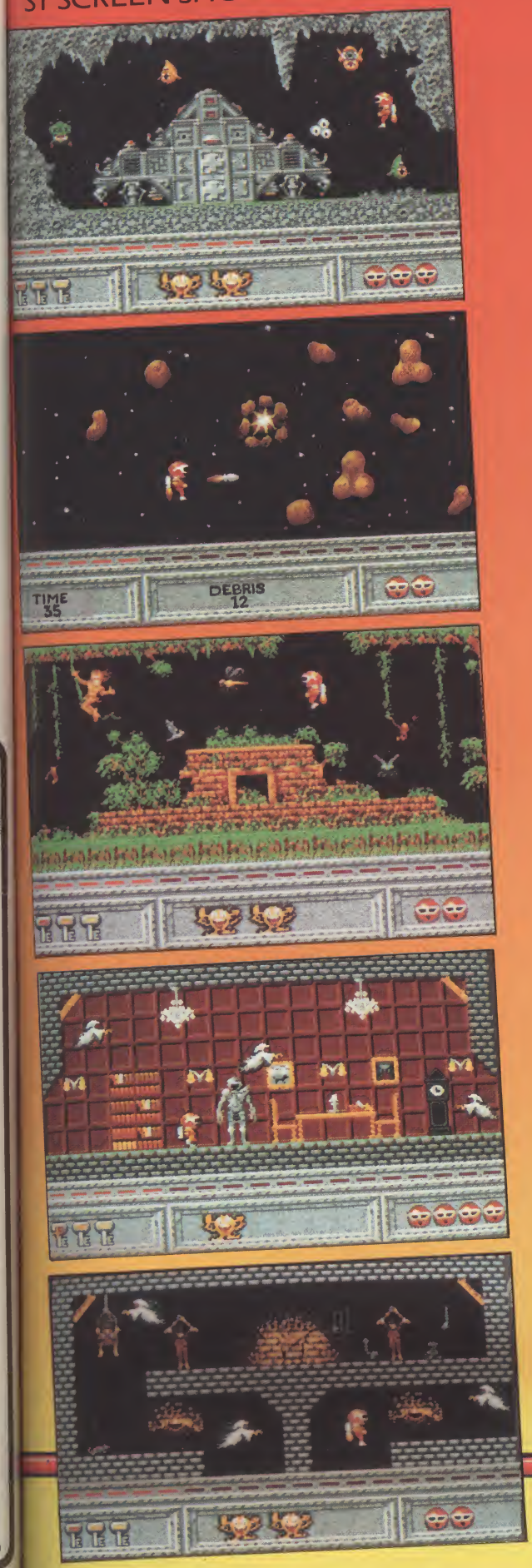

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ADVENTURES

Brillig lends a hand in solving problems for fantasy fans

Marshall is quick on the draw

THE power of the written word! Last month I bemoaned the fact that nobody had written in with a complete solution to Mirrorsoft's Shadowgate. No sooner had this forlorn cry appeared in print on the shelves of newsagents across the land than through my letterbox popped a full map and solution to said adventure.

Of course I might have guessed the answer to my plea would come from that dynamic duo in Newton Hall, Durham – Allen and Mark Errington. Thanks, thou good and faithful adventurers. With your assistance, I can shortly pass on some much sought after wisdom to those of our readers who are still wracking their brains over some of the tougher parts of Shadowgate.

Still marching onward and upward, and continuing to leave we lesser lights struggling along in his wake, is one of the fastest adventure solvers in the business, R.G.B. Marshall of Congleton in Cheshire. Regular readers of this column need no reminder that this prodigy cracks adventures quicker than most of us can rip the cellophane wrapping off the package.

You shouldn't be surprised to hear that his latest two conquests are Sierra On-Line's Gold Rush and Police Quest II – and I haven't even seen them yet, let alone started to solve them. As RGB finishes adventures so quickly, he is forced to import new ones in order to slake his thirst for fresh challenges.

He tells me that Police Quest II does not involve the hassle of negotiating the streets of Lyttleton from an aerial point of view – one of the few things I disliked about Police Quest I. Instead you have a pretty picture of Sonny and Keith's heads as they drive toward the selected location.

RGB says the graphics in Police Quest II are twice as good as its predecessor and the game builds towards an excellent climax.

As I write this, I understand that RGB is one of the few people to have reached the final stages of the hunt for the Holy Grail replica offered as a prize in a competition that required solving Mandarin/Level 9's Lancelot adventure.

Just shows that solving adventures can sometimes be financially, as well as intellectually, satisfying (though if RGB wins, he'll probably have to sell the prize to pay for all those imported adventures of his).

Richard Linsey of Newark is having a spot of bother with Infocom's Leather Goddesses of Phobos. It seems he doesn't know how to get past chief assassin Thorbast. This particular puzzle has a lovely and unexpected solution, Richard – for you and other readers stuck on the same problem, see this month's Hints and Tips.

Two young readers, Daniel Gilkes and Noah Bunn from Northampton, are having a little difficulty with Space Quest III. They don't know how to get on the pirates' ship so for their benefit and for others, the answer appears below.

Legend of the Sword is causing Leif Einar Claus from Tromso in Norway a lot of headaches. Thanks to Alan Millar and James Pearson, I am able to help you and many of our readers with some timely advice.

Rainbird's Guild of Thieves is still giving heartburn to several adventurers, not least J. Creighton from Newcastle. He has earned a lot of points, but is desperate to know where the platinum brooch is hidden and how to find a way down the thin shaft. Despair no more – Hints and Tips has the answers.

From The Netherlands, Arnoud Otte writes to say that despite what I said in an earlier issue, it is possible to stop the bell ringing in the post office in Jinxter. Here's how to do it:

Repair the canoe with the mouse, post the saddle to the station (two fergs), put the sock in the bell when the postmistress is under the counter, leave then re-enter the post office and crack the safe. Well done, Arnoud.

A number of readers, foremost among whom is Liz Ahmedzci of Chatham, have sent in solutions to Fish! Glad to hear you're another after my own heart who prefers text to graphic adventures, Liz, and sorry there's no BMW for sending in the solution. Next month I'll give you the benefit of some of their discoveries.

Last but not least, my thanks to Kjetil Valstadsve and Kenneth Holan over in Norway for their solution to Rainbird's Corruption and to Neil Hickman of Halesowen for his tips for The Bard's Tale.

Here's one of the useful coordinates Neil supplied. Visit the Key Master on level three by going from the entry stairs at level one North (+12), East (+19), Up (+2). You'll then be able to buy a master key, but only if you can afford the asking price of 50,000 gold pieces.

Until next month, stay away from snoozing dragons.

LEGEND OF THE SWORD

How do I get the bottle from the lepre chaun?

● Ask Borgalius for the ring. Wear it. G to the leprechaun and shout at him. Giv him the coin and the pipe.

What do you say to the bird?

● When Shukka asks the question say N and eat the fruit. Go West then North an wait for the humanoids.

Can't find a light?

● There's a torch in the keep. Go inside then south-west, open the trapdoor an go down the stairs. The torch is on th

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ZAK McCracken is your everday tabloid journalist, always looking for a sensational story with which to amaze readers of his sleazy paper, the National Inquisitor. Now Zak thinks he's stumbled on a scoop that should make reports about World War II bomber planes being discovered on the moon or Elvis Presley being found alive and well and living in Stockport look mundane by comparison.

Zak believes that aliens have built a huge stupidity machine, and having taken over the Telephone Company are using the lines to transmit waves that will eventually reduce everyone's IQ to the level of an ill-educated marmoset.

In this three-disc adventure, where the graphics predominate heavily over the text, your job is to help Zak save the world from turning into the thickest planet in the universe. No typing is required as all the words you'll need to solve the adventure are supplied.

The largest portion of the screen is taken up with a picture of the current location across which Zak, almost a Leisure Suit Larry clone, strides. Some of the locations occupy more than one screen

Turn to Page 84 ▶

HINTS AND TIPS

wall – light it with the tinderbox you should by now have captured from the humanoids.

LEATHER GODDESSES OF PHOBOS

Can't triumph over Thorbast in a fair fight?

● Start to fight him and when he drops his sword, pick it up and give it back to him. He'll be so overcome he'll do the job for you. Once Thorbast is out of the way, you can have a set to with the monster, who will then flee leaving you free to untie the woman and collect another vital object.

Don't know how to restore the King's daughter to normality?

● Lose the letter T from the untangling cream using the Tee removing device, thereby giving you some unangling cream. Apply this to the 45 degree angle with the blonde hair.

GUILD OF THIEVES

Want to go down the shaft?

● Dig in the sandy bank and wear the boots that you'll find there. The platinum brooch is also to be found there.

KING'S QUEST III

Pirates won't let you on their ship?

● Make sure you have some money to give them. You'll find some coins on the table in the robbers' treetop hideout. Try putting your hand in the hole at the bottom of the oak tree in the forest – you might just find a rope ladder that you can put to good use.

What do I do on the pirate's ship?

● Listen to the mice in the hold. Recapture your stolen possessions by using the small crate. Wait until land is sighted and then go to work with the sleeping powder.

Zak gets the low-down from his Group Editor

◀ **From Page 83**

and when Zak reaches the edge such pictures scroll – very slowly and very jerkily – to reveal another part of the scenery.

At the bottom of the screen is a list of all the verbs – there are minor changes to the list from time to time, depending on the location. Below the verbs, Zak's inventory is shown as a two row, two column list of nouns which can be scrolled up and down for access.

Terse, one-line messages output by the program appear at the top of the screen while your constructed commands are shown just above the verb list. The whole game can be played with the mouse. All you have to do is click on a verb and click on a noun or on an object in the picture. A final click and the command is executed. Connecting words like to, and, and with are automatically inserted for you.

The verbs can also be selected by using single key presses – the keys are mapped to correspond with the positions of the on-screen verbs – but since you've invariably got to use the mouse to get at an object, little is gained. I found the mouse much quicker.

There are less than 20 verbs, consisting of the usual stock (take off, turn on, open, read and so on), but rather more nouns. The command "What is...?" comes in very handy. Clicking on this and then moving the cursor around the screen lets you see the names of any objects that can be accessed in that scene.

Game positions can be saved to any blank formatted disc. Sound effects vary from the fairly boring and monotonous to those that play non-stop during a scene and quickly get on your nerves. All can be toggled on and off with a function key.

The game opens with an introductory scene in the offices of the National Inquisitor. This and certain other incidents are interesting on a first encounter but become tedious in future plays and slow things down. For example, during the game, and regardless of what Zak is doing, the scene may suddenly move to the invaders' HQ.

These interludes are perhaps the best part of the game and involve two aliens, one of whom is rather deficient in grey matter. The conversations between these two odd-looking characters are quite funny. However, such scenes generally require no reaction from you. The designers have therefore thoughtfully allowed you to pass quickly over them by pressing Escape.

The action starts in Zak's apartment which contains a number of items there for the taking. But what use you'll make of a goldfish in a bowl, a butter knife, kazoo and remote control I'll leave you to discover for yourself. Out on the street a bakery beckons, and further along a loan company, where you can also buy and sell objects, repays a visit.

Hopping on a bus, providing Zak can wake the snoozing driver, lands you at the aiport. From here you can visit Mexico, Lima, Miami (which was always closed when I called), London (with Stonehenge immediately outside Heathrow), and other places. The game's protection mechanism requires you to enter four codes from a supplied sheet before you can take international flights.

The first flight is unusual in that you have to do something to upset and distract the air hostess, allowing yow to grab a vital object. I was less impressed with Mexico where a maze inside a temple had me going round in circles. Must we still have mazes in adventures? A puzzle concerning a two-headed squirrel may have you scratching around for firewood – kindness repays dividends, cruelty doesn't.

Graphically, Zak McCracken is colourful and sharp, using a Sierra On-Line (Kings Quest, Space Quest and so on) style of picture. Zak and other characters are of generous size but the animation is simple and slow.

Along with frequent disc accessing, the pace is sluggish. Control can be switched from Zak to one of three other characters – Annie, Melissa and Leslie – giving an unusual slant.

The game comes complete with a copy of the National Inquisitor which repays careful reading as it contains a number of clues. The plot is a fairly fresh one – aliens wearing Groucho Marx glasses and moustache sets has got to be a first – but somehow the game failed to catch alight for me.

Perhaps the slowish pace, the simplicity of many of the puzzles and the limited number of verbs spoiled it for me. Overall, Lucasfilm's Zak McCracken is worth playing but falls well short of the content and humour of Sierra On-Line's adventures.

Searching the flat is an initial task which requires some head scratching

Presentation	***8***
Atmosphere	***7***
Puzzlement	***6***
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Overall	***7***

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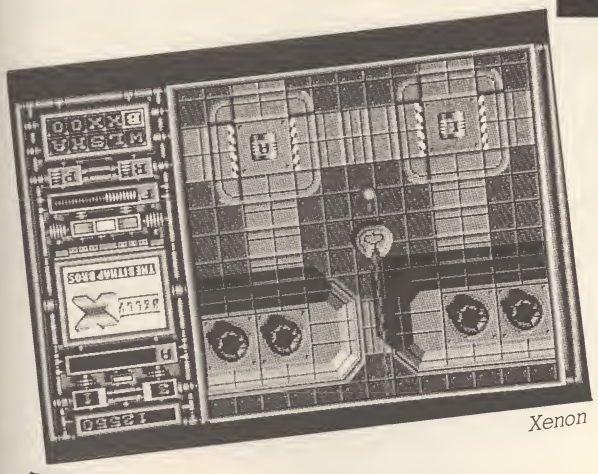
Xenon

ARCADE CORNER is an occasional feature where avid games players can help their fellow readers. It's a place where we publish maps, complete solutions, cheat pokes and hints and tips.

If you have anything about your favourite arcade game that you feel would be of interest send it to:

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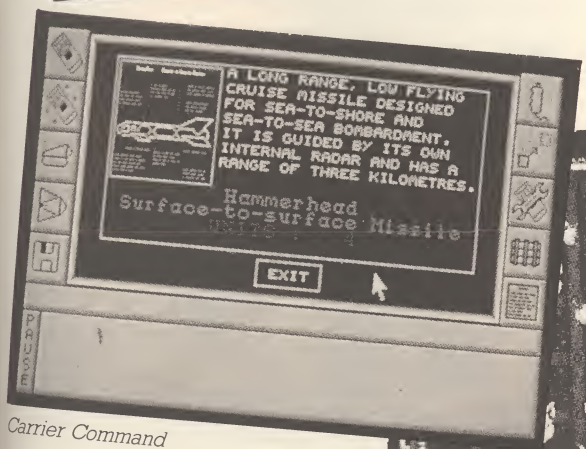
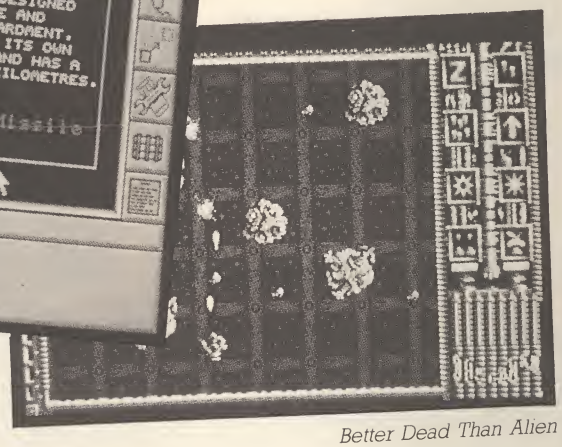


Carrier Command


Better Dead Than Alien

THIS month we feature hints and tips for **Xenon**, list the passwords to **Better Dead Than Alien** and reveal a cheat mode left in by the programmer of **Carrier Command**.

Xenon

MARK Perry of Pangbourne, Berkshire, provides the help for Xenon: On the first part of sector one watch the demonstration to see how to complete this. Copy the technique making sure you don't walk into the sentinel at the end. For the second part stay as far back as possible. Try to gain two orbiting balls as these have good destructive power, avoiding wingtip lasers if possible.

Kill all the squadrons of aliens that come down the screen – they supply armour and homing missiles. When you get to the sentinel dodge him and splatter him with shots until the red bulbous part appears and starts to glow. Line up underneath and blast your way into sector two.

Knock out any wall opponents as soon as they come into view. They smother you in gunfire as you approach them. It is important to gain as much power for your shots as possible. This enables you to shoot the opposition before they become too much of a problem. Shoot the sentinel as he moves back up the screen or just as he begins to come down – make sure you don't get trapped underneath.

Now you can cheat by crashing into the left side wall. When your next ship arrives all the aliens will have disappeared and all you have to do is kill the next sentinel.

Better Dead...

DAVE Ramsey of Hornchurch, Essex has provided all the passwords for Better Dead Than Alien – the shoot-'em-up based on the classic Space Invaders arcade game:

1 Elektra
2 Syzygy
3 Drambuie
4 Plug
5 Soprano
6 Mayonnaise
7 Faucet
8 Woomera
9 Narcissus
10 Debutante
11 Firkin
12 Acoustic
13 Triptych
14 Jabberwocky
15 Whimsical
16 Cornucopia
17 Punjabi
18 Tiddly Pom
19 Kewpie Doll
20 Grammarian
21 Crossword
22 Quarantine

Carrier Command

HERE is a cheat mode for Rainbird's superb 3D arcade-action strategy wargame from Christian Simpson of Richmond, Surrey: After starting the game as normal go into pause mode and type in *grow old along with me*. The message *Cheat mode active* will be displayed on the screen.

Use the numeric keypad to select the following options:

6 Shows the colour palette used.

7 Advances the carrier when held down and freezes the display.

8 Numbers are printed at the top of the screen. What are they?

+ Protects the manta and walrus from missiles and collisions.

– Deactivates manta and walrus protection.

If you quit the game you can flick through your armoury by pressing the plus and minus keys.

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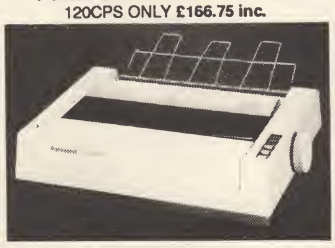

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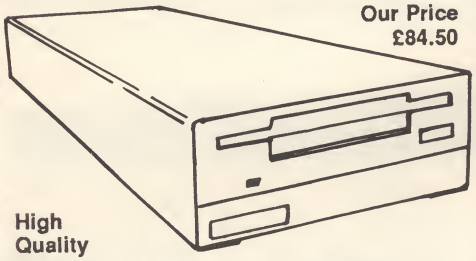

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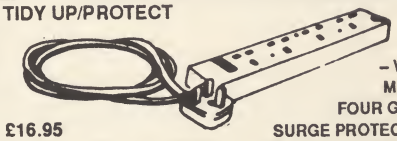

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The Arch — Alan Runcie

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GALLERY

GALLERY takes landscape as its theme this month. We feature four reflections from ST artists who have used very different techniques to produce their pictures.

S. Bassett's American skyline was created with Neochrome and finished on Degas Elite. It provides a warm night image of a highrise scenario.

Garry Benson's Greek Island was drawn using Art Director and movingly captures the continental feel of a Greek holiday. Meanwhile Alan Runcie's Degas Elite Arch peeps into a swathe of English green and brings back happy memories of a day in the country.

Finally, Allan Robinson shows an unusual aspect of the Australian landscape with his winter picture of a snow covered outback. Not quite skiing weather, but it does show that our cousins in the antipodes do occasionally experience a flurry of snow. If you have a work of art you would like to see exhibited on our worldwide stage send it on disc to Gallery.

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Skyline — Stephen Bassett

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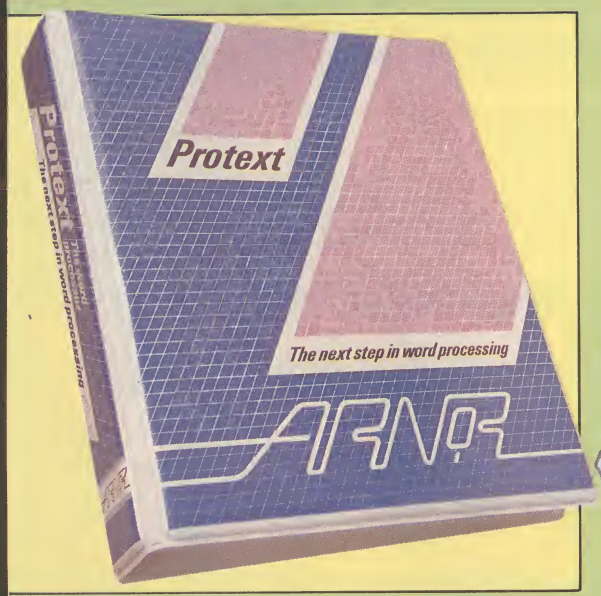

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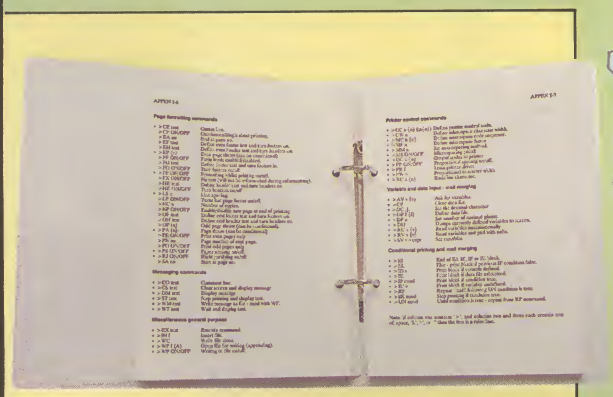

Press comments

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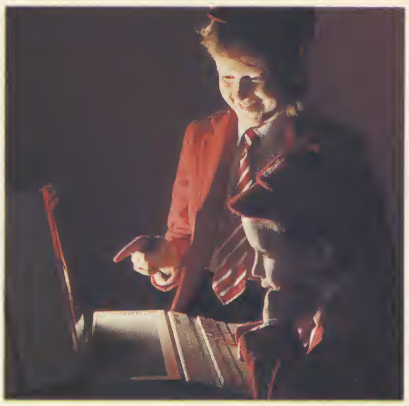
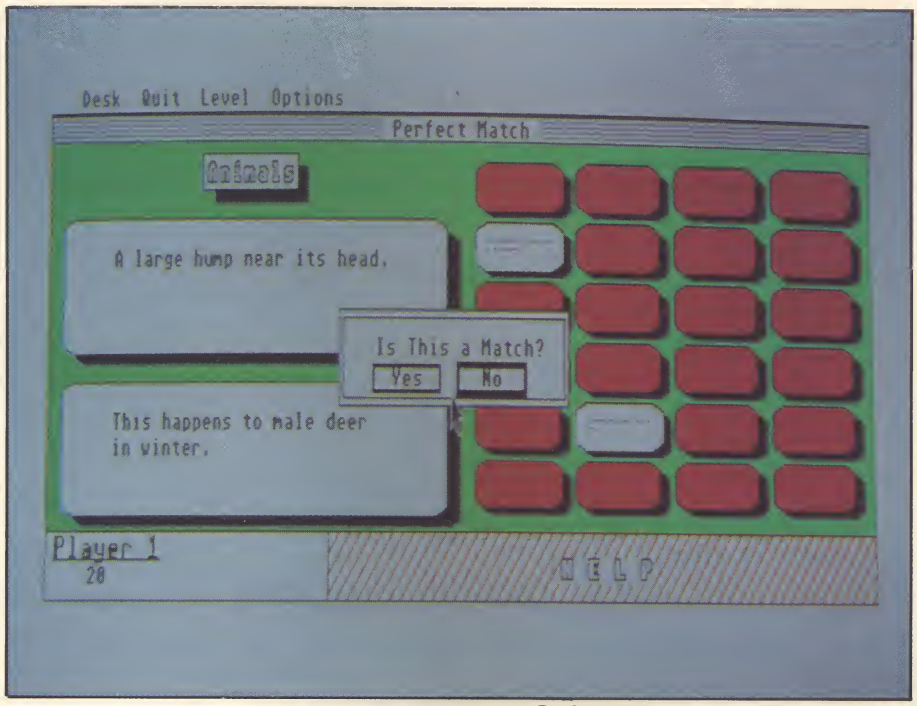


Nic Outterside offers advice on building an educational software library for your child



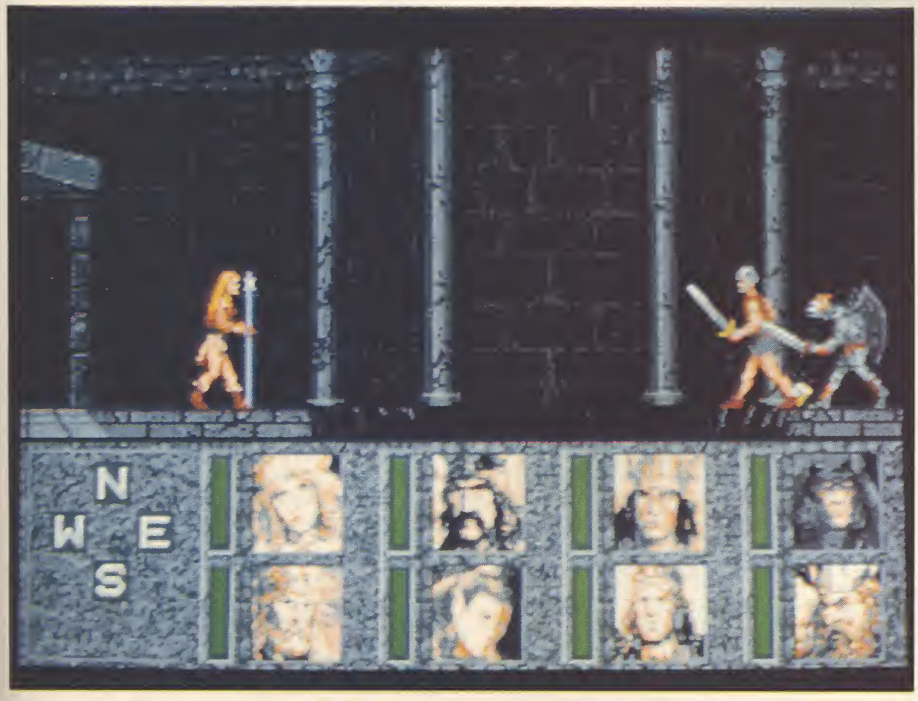
Perfect Match is an ideal learning game

Catch 'em young!

MOST people have a concept of educational software covering programs which teach or provide rote practice in specific academic skills. Such programs include Softstuff's Spellbook, Ladbroke Computing's Add with Oscar and Microdeal's Algebra 1.

These programs, and others like them, can be effective in providing motivation and in helping children practise important skills, but they play only a limited role in the general scheme of things.

Virtually any category of software can have educational value. But if your child is to realise the full potential of what micro technology has to offer he – or she – should learn to use the ST as computers are used in the real world – which is becoming more technical with each passing year. In the real world, computers are used as tools, not learning aids.



Heroes of the Lance, a thinking game for the older child

Building a library

To broaden educational possibilities you can provide your child with a wide selection of programs that serve different purposes as he grows. But, he must also learn how and when to use them. To facilitate this you can help him get to grips with the programs and play games with him. A philosophy which I, a former headteacher, hold firm is the earlier in life a child comes into contact with a micro the easier will be his growth with it.

My five-year-old son first learned how to switch on and load games into my old BBC Micro when he was two. Now, with constant availability of a micro and parental encouragement, he often toddles off to play games on my 520ST. Occasionally he will call me through to play a game with him.

This may involve simply making up a duo to play Better Dead than Alien, helping him to draw pictures on First Paint or even writing a few words on First Type. I like to believe this is the reality of constructive self-perpetuating learning in progress.

On a wider front you can observe your child's needs and point out how different programs can serve these needs and develop interest.

Primary selection

Certain vocational software packages I would deem almost essential to have at hand for the young primary school child,

Turn to Page 93 ►

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◀ *From Page 91*

would include:

● A good art package such as First Paint or the PD Neochrome. Most children love drawing and painting and the freedom of design and correction which these packages have to offer opens up a whole new colourful world to the young child.

● An easy to use word processor such as ST Writer. This is essential to give equal freedom to your child's writing. After five years of writing via a word processor – with the inherent editing facilities it provides – I find cold-typing on a manual or electronic typewriter laborious and neanderthal.

● A simple music program such as Music Construction Set. This will give new breadth to your child's musical inclinations and may even act as a catalist for latent talent in that field.

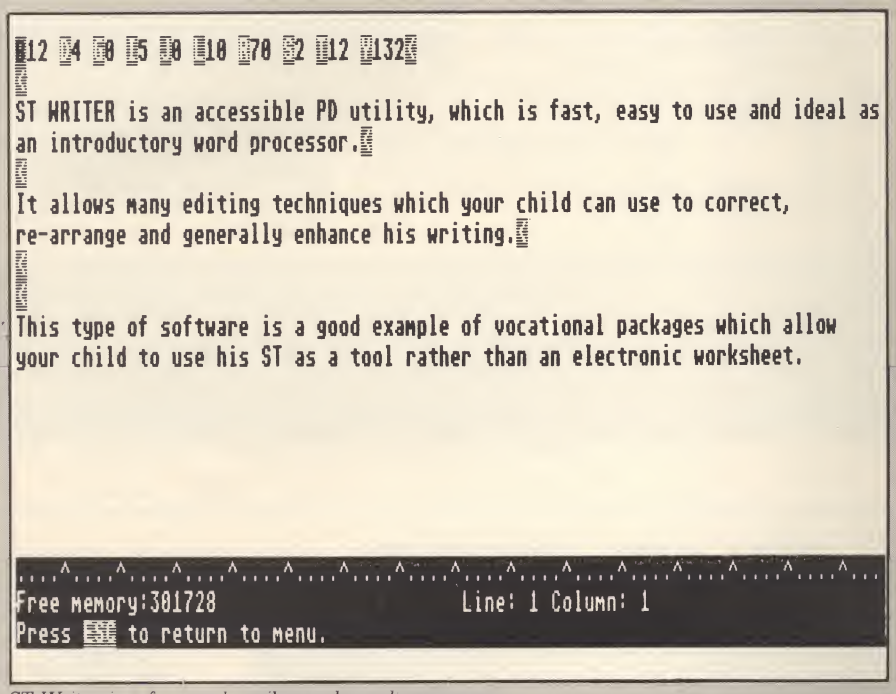
● A few essential desk accessories, especially an on-screen calculator, a notepad and a clock and calendar. Also recommended are games that will challenge thinking skills. Garfield, Batman or Microdeal's Perfect Match are excellent examples of what I mean.

For very young children I tend to look for certain features in software to ease use. Such features include auto-booting, minimal reading of text and clear icons. If a program is easy to use it will boost your child's confidence and speed up the rate of learning.

To promote early reading skills I try to choose programs in which objects on the screen move from left to right. Also because young children often confuse left and right, programs which permit your child to use either or both mouse buttons are also recommended.

If your child is of infant school age he will need large targets for the mouse with selections clearly indicated. In addition screens should not have an overwhelming number of selections.

It is also a good idea to make back-ups wherever possible of every program you buy. Use the back-up and put the original disc safely away from prying young hands. You never know when your child may take it into his head to move the write protect tab and corrupt or erase an expensive commercial disc.



ST Writer is a free and easily used word processor

While your child should become familiar with programs in each of the categories listed above, most programs in his software library are likely to be games.

Most adults have dim and distant memories of playing games and may not appreciate the subversive educational value and challenge of those currently available for the ST. Games software has come a long way since the days of Space Invaders and Pac Man.

Text and text/graphics adventures such as Infocom's Wishbringer or the graphically illustrated Sierra On-Line series provide an excellent opportunity for your child to develop creative thinking skills. These games require logic, decision-making and lateral thinking while supporting spelling, reading and vocabulary extension.

All the Infocom games are excellent text adventure mindbenders, however younger children will almost certainly need on-screen graphics to hold interest. You could even tackle one of these adventures with your child and make solving it a family affair – you never know you may even enjoy it!

Even some games which at first glance seem to provide nothing more than a mindless zap-'em-up can also require careful planning and problem-solving strategies.

The range is typified by recent releases such as the Western shoot-out Wanted, the scrolling shoot-'em-up Fusion, the revamped platform and ladders game Chuckie Egg or even the Breakout adaptation Arkanoid. All require logical planning if you are to be successful.

If your child is slightly older, more testing games such as Heroes of the Lance, Elite or Captain Blood will extend powers of reasoning and planning while feeding creativity.

However, selecting the best software in each category is an individual matter as all children are different and develop at different rates and directions on the learning curve. Many of the packages mentioned were chosen primarily because they are inexpensive or free and secondly because they are fairly simple to use.

New software is being introduced all the time, so it is wise to constantly check advertisements and to read reviews to keep abreast of new releases and help you make your choices.

Further extension

Some software packages may prove invaluable in specific individual cases. For instance, if your child has a large record or butterfly collection, he may want to catalogue it with a database. Or equally he may wish to store names and addresses of his friends, fellow collectors and relations.

If he is interested in electronics or is technically minded he may want to tackle a building project. Perhaps software or hardware to control his Technic Lego models will prove useful. Personal Robot's Robokit – reviewed in the December 1988 issue of *Atari ST User* – may be just the package he needs.

If he is a budding writer he can use a word processor, but a desktop publishing program will allow more flexibility to perhaps publish his own weekly family newsheet – Dorothy Brumleve's PD Kid-Publisher is a good starter here.

Equally, if he enjoys photography he may want to digitise his photos. Or if he is into designing he may benefit from an inexpensive package such as Cyber Studio.

Most children need considerable parental assistance to fully exploit packages such as these, but the rewards are enormous. It is time, perhaps, for all of us involved in the education processes to realise that the micro is an important tool and not just a glorified electronic worksheet.

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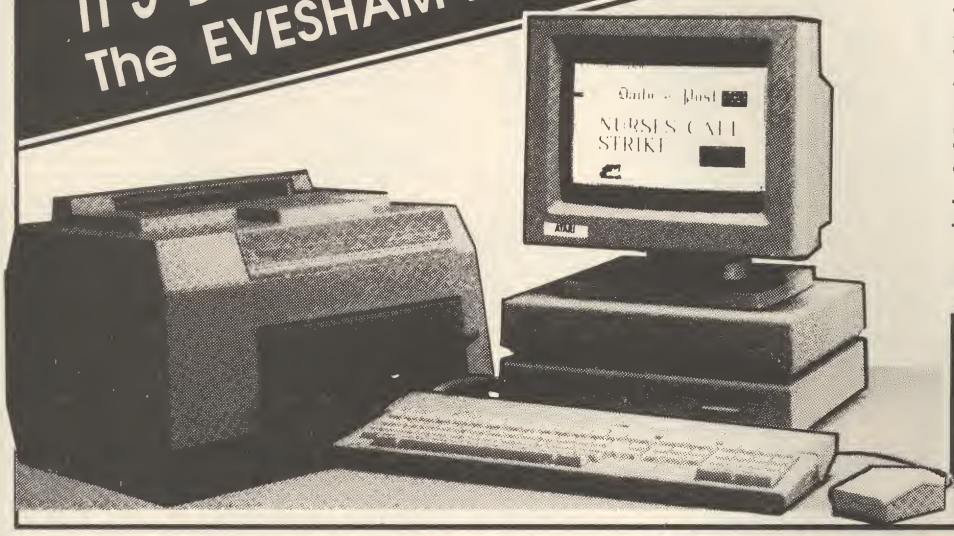

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Bombs away!

In Part 2 of his STOS series David McLachlan shows you how to swap screens and detect those sprite collisions

I HAVE written a small demonstration program this month which contains some common techniques used to write games. They aren't just restricted to STOS though. Once you have an understanding of how they work you should be able to adapt them to any programming language, although it won't be as easy a task as with STOS.

The commands covered in this article include SCREEN SWAP – vital for smooth graphics and animation – and a full explanation of the tricky COLLIDE function.

As we will be using sprites you will need to design some yourself, as they aren't included in the listing. Consult the table opposite which describes the various sprites used in the game and their positions.

The program repeatedly moves a laser base and spaceship from left to right then back again, each at a different speed. To spice the action up a little, asteroids at the top of the screen start to move at random. The idea of this game is to fire missiles from the laser base to hit either a moving asteroid or the spaceship.

At first you might think the program looks rather complicated, but once broken down into its various routines it's quite simple. Its structure is as follows:

- Set up variables and arrays.
- Start of loop.
- Print stars, asteroids and sprites.
- Screen swap.
- Check for collisions.
- Goto loop start.

The first thing the program does is to call a subroutine that sets up screen five along with various variables and zones. The powerful command SCREEN$ acts like a software blitter and with it you can copy sections of the screen into a string, or vice versa. The syntax is:

```
a$=SCREEN$(screen,x1,y1 to x2,y2)
SCREEN$(screen,x1,y1)=a$
```

The first line shows how a rectangular area of the screen can be stored in the string *a$*. The parameter *screen* is either a screen or a bank number and *x1,y1,x2,y2* are the coordinates of the screen rectangle to store.

In the second example the syntax alters slighty, and it now allows you to copy an area of the screen stored in the string *a$* to the screen or bank number *screen* at the coordinates *x1,y1*.

In the game the asteroid sprite is copied using SCREEN$ into the string *azteroid$*. "You've spelt asteroid wrong", you're probably thinking. Well you can't use it as a variable because the word contains the letters AS – a STOS command. STOS will separate AS from *asteroid* thinking it's a command followed by the variable *teroid*. Try it and see. That's also why the variable for the laser is spelt *lazer*.

Once we have a copy of the asteroid in *azteroid$* the screen is cleared and the stars are printed. In order to demonstrate screen swapping the game doesn't use sprites for the asteroids. A screen full of stars is plotted and copied into bank five. We will have to reprint them later in the program, otherwise the asteroids will rub them out when they move.

We now print the rest of the asteroids – seven in all – across the top of the screen at random heights. As this is done, zones are set up around the asteroids so later we can check for collisions. Also we place small invisible sprites where the asteroids are, assign a movement pattern to them and switch the movement on. I'll explain the reason and how to do this a little later.

We now print the rest of the sprites, then it's head first into the main loop, where all the action takes place.

Screen swapping

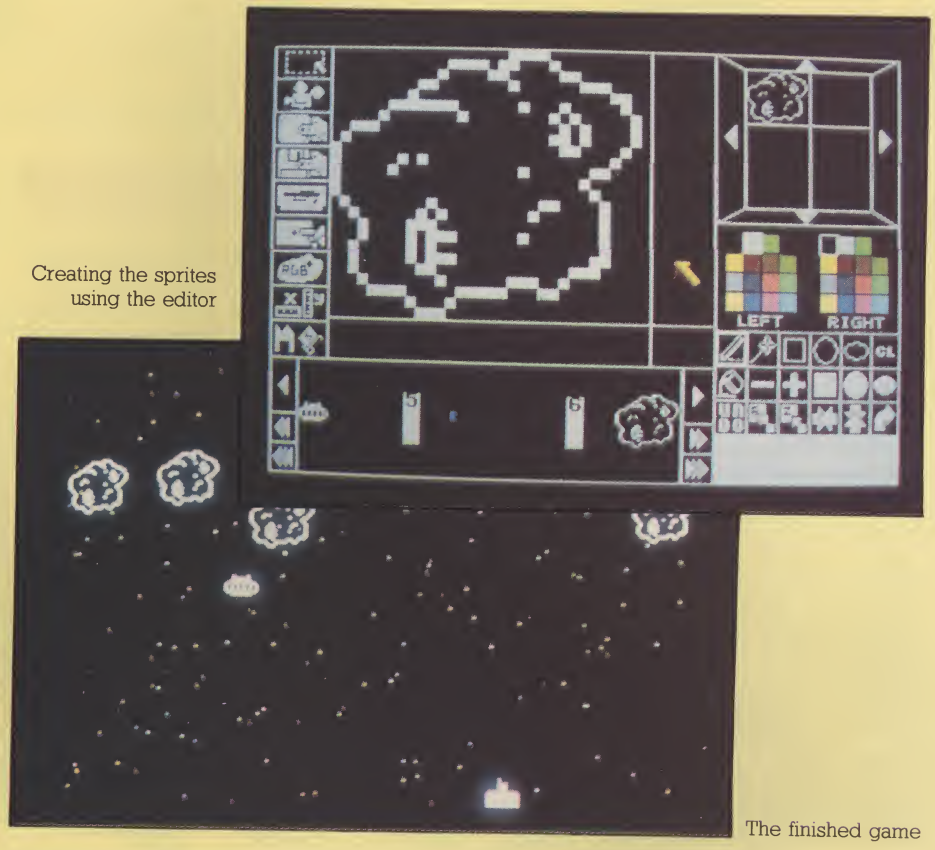
First of all let me explain about screen swapping. The idea is to print all the updated graphics on a screen stored in memory – not the one displayed on the monitor – then swap this with the screen you can see. STOS Basic has a clever screen variable called LOGIC which allows you to swap the physical screen – controlled by the screen variable PHYSIC, with the logical screen – con-

trolled by the screen variable LOGIC. You can see a full explanation of these screen variables in last month's article.

At first LOGIC is set to the same address as PHYSIC so screen swapping won't make any difference, however it will if LOGIC points to a different screen. In our program we point LOGIC at the background screen, the address of which is held by BACK.

When we want to print anything on the screen we must print it to the LOGIC screen, which now can't be seen because it is in the background. Then we use SCREEN SWAP to exchange the LOGIC screen with the PHYSIC screen.

The graphics which you have printed are now displayed and you can print updated graphics, like a sprite, in a different position on the now vacant LOGIC screen. This technique is used in practically all commercial games to produce flicker-free sprites.



Creating the sprites using the editor

The finished game

Printing graphics

The first task performed in the main loop is to call another subroutine to handle the printing of all graphics. It is carried out in the following order: First the star background is copied from bank five on to the logical screen, deleting anything that used to be there, then the asteroids are printed and finally the sprites are displayed.

The asteroids are controlled in a similar way to the bouncing Orbit logo in one of the three free games provided with STOS. This is a very useful way of controlling the path of large sprites without having lots of IF statements to change their direction. I'll explain this shortly, but first, an explanation of the sprite command is in order. It is really quite simple to use. The syntax looks like this:

```
SPRITE s,x,y,i
```

It displays sprite *s* at the coordinate *x,y* using the image *i*. You are allowed up to 15 sprites so *s* can be any number between one and 15. The images are stored in sprite bank one and you can have any number of images, memory permitting of course. They can be created easily using the sprite editor.

When you define the sprites required for this game use the Quit & Grab option in the file section of the sprite editor. This grabs the sprites from the editor and places them into bank one.

Typing LISTBANK will list the banks that are defined. You should find sprite bank one will be listed. The X coordinate of a sprite can range from –640 to +1280, which means it can come and go off the side of the screen. The same can be done with the Y coordinate, but the range is only –400 to +800.

Moving sprites

The MOVE command allows you to define paths for sprites to follow. There are two such commands, both performing the same function except on different axes:

```
MOVE X s,"start(speed,step,count)l end"
MOVE Y s,"start(speed,step,count)l end"
```

Both commands are more or less the same, so I will only explain the MOVE Y command. The variable *s* is the sprite you wish to move. The next parameters allow you precise control over the sprite. The number *start* is the Y location you wish the sprite to start from – an optional parameter. If you omit it the sprite starts from where you placed it on the screen.

Next *speed* defines the delay in fiftieths of a second between each movement of the sprite. The *step* is how many pixels you wish the sprite to move with each time, and *count* is how many times you would like it to perform this function. This is also optional, and setting it to zero will have the effect of *count* being infinite.

The last parameter, *end*, is also optional and will specify an end coordinate of the sprite's movement provided that it can be at that coordinate.

If the step takes you past the end coordinate you will find that the sprite won't stop until *count* has finished. You can also have an optional *l* just before the *end* and this will make the movement loop back to the start. The options in brackets can be repeated to string together several movements.

The program's movement command looks like:

```
MOVE Y sp,"(3,1,10)(3,-1,10)l"
```

In conjunction with the other MOVE command the sprite can be made to whizz around the screen along a complicated path. To set it going you use the

Turn to Page 100 ►

Image number	Description	Size	Hot spot coordinate
1	Laser base	16 x 11	0,0
2	Spaceship 1st frame	16 x 9	7,4
3	Spaceship 2nd frame	16 x 9	7,4
4	Spaceship 3rd frame	16 x 9	7,4
5	Bullet	16 x 4	0,0
6	Asteroid	32 x 25	0,0

Use the editor provided with STOS to create six sprites

◀ **From Page 99**

command MOVE ON *s*, where *s* is the sprite you wish to start moving. Issuing this without specifying a sprite number will result in all the sprites you have defined with movement to start moving.

The position of the asteroids are now printed where their respective invisible sprites are. The sprites' Y position is found by using the command Y SPRITE:

```
y=Y SPRITE(s)
```

The variable *s* is the number of the sprite whose Y coordinate you want to find and *y* is the value returned. You can ask the X position of a sprite with the similar command:

```
x=X SPRITE(s)
```

So when one of the little invisible sprites moves up and down we can find its Y position and then use SCREEN$ to put an image of the asteroid at the sprite's Y location.

Now we print the spaceship and laser base then swap screens. We don't define movement of the laser base and spaceship because this is on interrupt. Unfortunately the interrupt isn't in synchronisation with our screen swapping, so if we were to use the movement command the sprites would appear to be flickering.

The spaceship's direction is controlled by the variable *sd*, which is set to -2. In line 920 we subtract -2 from the X position of the spaceship. The result of this is to add two because two minuses make a plus. When the spaceship reaches the side of the screen its direction is reversed. We make *sd* equal to *-SD*.

Crash course

Now for collision detection. If you have played around with the COLLIDE function you might have found it a bit confusing. I'll explain exactly how it works. The syntax of the command looks like this:

```
n=COLLIDE(s,w,h)
```

The variable *s* denotes which sprite you want to check and *w* and *h* are the variables to set the width and height of an imaginary box around the sprite. Contrary to what the manual tells you, the hot spot is, in fact, in the centre of this box.

Whenever STOS draws a sprite you specify its coordinates in terms of this point on the screen. As a default the hot spot is always at the top left of a sprite but you can change this using the sprite editor. When you define the spaceship you will have to set its hot spot in the centre.

The value that the collide command returns is a bit mapped number indicating which sprites, sprite *s* has collided with. Each bit of the two byte number represents a sprite. Bit zero is the mouse pointer, as this is sprite zero, bit one represents sprite one, bit two is sprite two and so on up to 15. If, for example, the collide command returned the number six the bit map would look like this:

```
0000000000000110
```

which means that sprite *s* would have collided with sprites one and two.

All that remains is to use INKEY$ to check the spacebar for firing the bullet. When you press a key it is inserted into a buffer and INKEY$ gets the next character out of it. We make *k$* equal to INKEY$ and check if it is a space. If it is, we set a flag denoting that firing is in progress and we make a shooting sound. We now can check for the fire flag and move the bullet if and when the check proves positive.

When a collision is detected between the spaceship and the bullet, we set the fire flag back to its original state, and to add a bit of atmosphere use a BOOM to add sound. We also do the same when we detect the bullet sprite entering the zone of a moving asteroid.

● *Next month I'll create a simple bat and ball game to demonstrate the Play command and changing the mouse pointer.*

```
   1 REM Zap 'ep By D. McLachlan
   2 REM (c) Atari ST User
  10 KEY OFF : MODE 0 : CURS OFF : HI
DE ON : CLICK OFF
  20 GOSUB 2000
  30 LOGIC=BACK : MOVE ON sp
  40 REM******** MAIN LOOP **********
  50 WHILE-1
  60 GOSUB 1000
  70 IF Y SPRITE(3)<0 THEN fyre=0
  80 k$=INKEY$
  90 IF k$=" " AND fyre=0 THEN SPRITE
 3,X SPRITE(1)+8,Y SPRITE(1),bullet :
 fyre=1 : SHOOT
 100 IF COLLIDE(3,8,4)=4 THEN SPRITE
OFF 3 : fyre=0 : BOOM
 110 n=RND(50) : IF n=1 THEN MOVE OFF
 sp : sp=RND(6)+4 : MOVE Y sp,"(3,1,1
0)(3,-1,10)l" : MOVE ON sp
 120 IF sd=-2 THEN DEC spaceship : IF
 spaceship<2 THEN spaceship=4
 130 IF sd=2 THEN INC spaceship : IF
spaceship>4 THEN spaceship=2
 140 IF X SPRITE(1)<2 OR X SPRITE(1)>
302 THEN d=-d
 150 IF X SPRITE(2)<-64 OR X SPRITE(2
)>332 THEN sd=-sd
 160 z=ZONE(3) : IF z=sp-3 THEN SPRIT
E OFF 3 : fyre=0 : BOOM
 170 WEND
 999 REM******* Print Graphics ******
 1000 SCREEN COPY 5 TO LOGIC
 1010 FOR x=0 TO 6
 1020 SCREEN$(LOGIC,x*48,Y SPRITE(x+4
))=azteroid$
 1030 NEXT x
 1040 IF fyre=1 THEN SPRITE 3,X SPRIT
E(3),Y SPRITE(3)-8,bullet
 1050 SPRITE 2,X SPRITE(2)-sd,100,spa
ceship
 1060 SPRITE 1,X SPRITE(1)-d,188,laze
r
 1070 UPDATE : SCREEN SWAP : WAIT VBL
 1080 RETURN
 1999 REM ********* Set up **********
 2000 RESERVE AS SCREEN 5
 2010 DIM y(7) : sd=-2 : d=-4 : sp=7
: spaceship=2 : bullet=5 : lazer=1 :
sc=0
 2020 SPRITE 1,1,y(1),6 : UPDATE : PU
T SPRITE 1 : SPRITE OFF : WAIT VBL
 2030 SET ZONE 1,0,y(1) TO 32,y(1)+25
 2040 azteroid$=SCREEN$(PHYSIC,1,y(1)
 TO 32,y(1)+25) : CLS
 2050 FOR x=1 TO 7 : y(x)=RND(5)*10 :
 NEXT
 2060 FOR s=1 TO 200 : INK RND(15) :
PLOT RND(319),RND(199) : NEXT
 2070 SCREEN COPY PHYSIC TO 5
 2080 FOR x=0 TO 6
 2090 SCREEN$(PHYSIC,x*48,y(x+1))=azt
eroid$
 2100 SET ZONE x+1,x*48,y(x+1) TO (x*
48)+31,y(x+1)+25
 2110 SPRITE 4+x,x*48,y(x+1),7 : MOVE
 Y 4+x,"(3,1,10)(3,-1,10)l"
 2120 NEXT
 2130 ANIM 2,"(2,5)(3,5)(4,5)l" : MOV
E X 2,"-166(1,1,502)(1,-1,502)l"
 2140 MOVE X 1,"0(1,2,152)(1,-2,152)l
"
 2150 SPRITE 2,-16,100,2 : SPRITE 1,0
,188,1
 2160 RETURN
```

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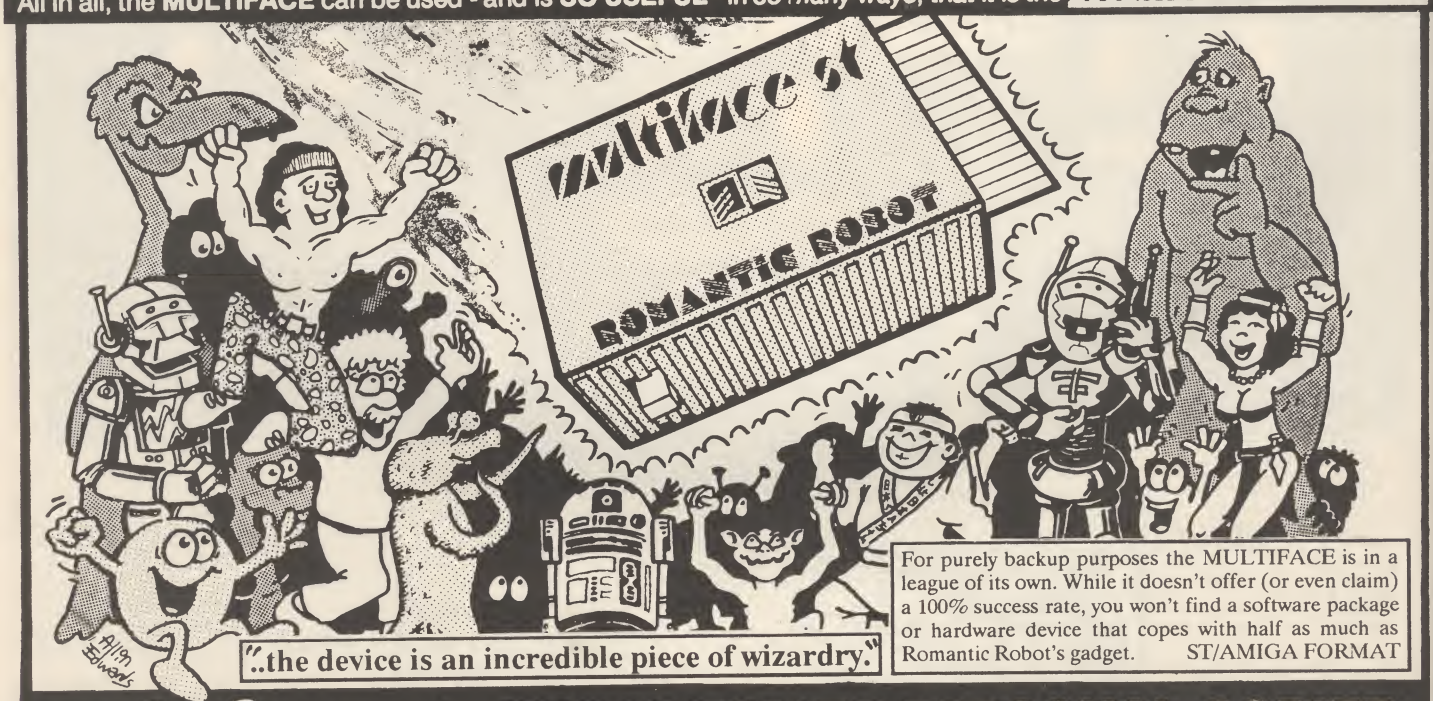

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Roland Waddilove goes for a hard drive with his ST and finds a couple of winners

The hard facts

THE popularity of hard disc drives is rapidly increasing as their prices tumble. Third Coast Technologies and Systems 2000 each have a range on offer with prices starting at under £400 for 20Mb models and up to almost £1,000 for the largest drives.

Rather than testing two equivalent drives for a comparative review I picked a rock bottom 20Mb Systems 2000 drive and a near top of the range 85Mb Quantum ProDrive 80S from Third Coast Technologies (TCT), the reason being that one hard drive is pretty much like any other and the differences are minimal.

Both drives are contained in fairly large sturdy metal boxes which take up a fair amount of desk space, so the best spot for them is under the monitor. An 18 inch cable connects the drive to the ST and a power cable plugs in the back of the unit.

Both were ready for use and all that was required was to put the boot disc provided into the ST's floppy disc drive and switch on. Once done all my most frequently used software packages and desk accessories were copied to the hard drive and the floppies consigned to the back of the desk drawer to gather dust.

Four from one

A hard drive involves no different technique to using a floppy, although it has a far greater storage capacity and is a lot faster.

One minor problem is that the ST can only access 16Mb so a utility program is provided to partition the drive into sections smaller than 16Mb. This had already been done, the Systems 2000's 20Mb being split into four equal partitions while the 85Mb ProDrive had nine.

Each partition acts like a separate hard drive and each has its own hard drive icon on the desktop. You can open each one, copy information from one to another or to floppies and so on. It's just like having several very fast large capacity disc drives plugged in.

The big ProDrive comes with a couple of extra features making it more attractive than the base models of either company. The hard drive unit is simply a cartridge that plugs into the front of the casing. A key locks it in place.

Automatic head parking whenever the power is cut off means that head crashes are almost eliminated. You can even pull the drive unit out when it's switched on, though of course, if you're accessing the disc at the time you'll lose the data you were reading or writing.

This feature could be useful for swapping drive units for different applications, or perhaps for security, as you could unplug a drive containing sensitive data and pop it in a safe overnight.

Both drives come with a utilities disc enabling you to boot from drive C – the hard disc – format and partition it. There is also a patch which gets you round the ST's 40 folder bug which rears its head when you open and close more than 40 folders. It crashes the ST because it runs out of memory to store the folder information.

TCT's utilities also allow you to set the drive's internal clock and copy files without updating their time and date stamp.

It is well known that hard disc drives are faster than the floppy variety, in fact, that's one of the main reasons for using them. But just how fast are they? I tried a simple performance test involving seeing how long it took to boot up four common software applications, K-Spread 3 (a 233k spreadsheet), ST Basic (a 124k language), 1st Word Plus (a 153k word processor) and Devpac (a 51k assembler).

The results in Table I show the Quantum ProDrive to be consistently and significantly faster than the Systems 2000, sometimes by a factor of two. Averaging out the figures, ProDrive can transfer data at 24k per second (peaking at 43.3k) and Systems 2000 at 12.2k a second (16.6k peak), while floppy discs are rated at a mere 5.7k a second (7k peak).

The tests were carried out using a 520ST, and it is worth noting that the Mega ST is faster still, shaving a second or two off each of the times.

ProDrive incorporates DisCashe, a 64k bank of high speed ram which is used to increase performance on read operations.

When you ask for an item of data from the disc it is taken from the ram buffer and not the disc, so the seek time and rotational latency – the time taken to move the read/write head to the correct track and wait for the right sector to come round – is eliminated. When requesting 1k of data this delay typically makes up 80 per cent of the time taken.

The Systems 2000 70Mb hard drive is also a special fast access one giving significant speed improvements over the base model tested here.

Conclusions

Both hard disc drives offer substantial advantages over the ST's built-in floppy but not everyone will gain the full benefits. If you constantly switch from package to package like spreadsheet to word processor to database, or use one particular piece of software that spends a lot of time accessing the disc, like a C compiler, the saving in time due to the hard disc's speed is quite significant.

If you have large amounts of data to manipulate as in database, spreadsheet or word processor files the vast memory capacity of even the smallest hard disc will cut out disc swaps and avoid storage

Turn to Page 106 ►

◀ From Page 105

problems. A hard disc also goes some way towards solving a 520ST's memory restrictions. The hard disc can be used as a form of memory expansion, so program modules and word processor spill files can be stored on disc rather than in memory.

Hard discs have several disadvantages the first being the initial cost – they start at around £400 for the smallest. This must, of course, be offset against all the floppy discs you'll save. The massive Quantum ProDrive 85Mb hard disc has the storage capacity of 236 single sided or 118 double sided floppies.

The second problem is that you have all your eggs in one basket – one head crash and you've lost the lot, so it is essential to make backups of your data regularly. This can be either to floppy discs or to another hard drive, and clearly the hard drive option would speed and smooth the process – which can be rather long and fiddly with floppies. This adds to the cost and time involved in using hard discs.

Finally, all hard drives contain noisy fans which hum away keeping them cool. In a busy office they aren't too distracting, but at home I found they could be heard even in the next room if the doors were open. Systems 2000 is very slightly noisier than ProDrive.

Both drives offer large storage capacity, speedy access and ease of use. I have no complaints about either. There are smaller and cheaper models in the TCT range, and larger and faster ones in the Systems 2000 range.

Which is right for you depends on how much storage space you need and how frequently and for how long your software packages access the disc drive. If a removable drive cartridge is a priority then the ProDrive is the one to go for. However, if speed is of the essence then any TCT drive or the Systems 2000 70Mb high speed drive is best.

Boot test	Floppy disc	Systems 2000 20Mb	TCT 85Mb
K-Spread 3	33.24 sec	14.02 sec	5.38 sec
ST Basic	17.21 sec	10.44 sec	6.25 sec
1st Word Plus	30.94 sec	12.76 sec	6.82 sec
Devpac 2	13.80 sec	6.20 sec	4.91 sec

Table I: The time taken to boot up four common software packages

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Product: 22Mb drive
Price: £339
Product: 32Mb drive
Price: £439
Product: 85Mb drive with removable cartridge
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Supplier: Third Coast Technologies, Unit 8, Bradley Hall Trading Estate, Standish WN6 0XQ.
Tel: 0257 426464

FACT FILE

Systems 2000
Product: 20Mb drive
Price: £399
Product: 40Mb drive
Price: £499
Product: 70Mb high speed drive
Price: £899
Supplier: Systems 2000, The Shaftsbury Centre, Percy Street, Swindon SN2 2AZ.
Tel: 0793 514055

Prospero C – The Verdict

We are very proud of our new C compiler, but what about some less biased opinions?

Stephen Hill reviewed Prospero C for Atari ST User magazine (Feb 89). How did you find it?
"Prospero's Workbench sets a standard of user friendliness yet to be surpassed... I am forced to resort to sheer nit picking to find fault."

A nice working environment is all very well, but can you use the compiler?
"I encountered no trouble whatsoever in compiling any of my own programs... Prospero has obviously taken a great deal of trouble to simplify the process of linking your C programs."

But what about debugging? Even reviewers write programs with bugs in occasionally!
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What about the manuals – do they tell you all you need to know?
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So can you recommend it?
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Matthew Jones, in Page 6 Atari User (Feb 89) was also excited by Probe:-
"Probe ... is something I dreamed of years ago... If you don't have source level debugging you should buy this now... Being able to watch your code execute will at least double your productivity."

And your conclusion?
"Prospero C will in future be my language of choice for the Atari ST. It supplies what I need in a compiler – ANSI standard, an integrated environment and source level debugging."

If you think you might come to the same conclusion as Matthew, write to us for further information and a free demo disk. Prospero C costs just £129.95 including VAT and shipping in the UK.

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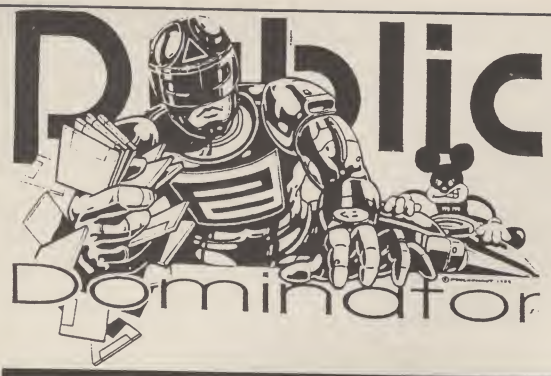

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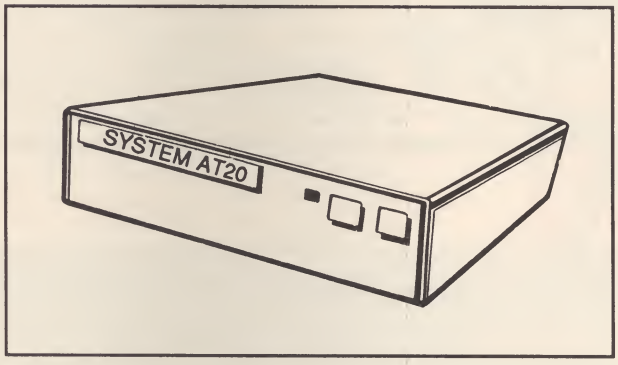

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VISA AMERICAN EXPRESS

Easy as

Nic Outterside compares two picture and word creation utilities for use with current ST educational programs

I SUPPOSE that in the natural course of events in the world of computer software, if you produce a good product the next stage is to provide either a sequel or an update. Two neighbouring educational software companies have gone one stage further and have each produced a similar utility designed to expand existing packages.

B.Spell Construction Set from B.Bytes is a picture and word extension program plus accompanying manual for use with its sythesised speech spelling package, B.Spell. It is compatible with both Degas and Neochrome art packages, and converts pictures in these formats to work with B.Spell.

B.Bytes says all pictures produced with the Construction Set can be freely distributed throughout the PD network, and if many people use this facility it could lead to a library of many hundreds of pictures and words which could be used within B.Spell.

The Construction disc contains a source program, an update program and four archived source files each containing Degas or Neochrome pictures or empty picture blocks.

Using the program can be quite fiddly. First you have to format two discs – one as a work disc and the other as a destination disc. The required source files are then copied to the work disc and unarchived, using the familiar PD ARCX.TTP utility.

You can now enter your chosen files into an art package like Degas Elite where existing pictures can be edited or new ones drawn. However, you must remember to disable Degas Elite's picture compression when saving any pictures.

B.Spell can only accept words of up to eight letters, so this necessarily – and quite rightly – restricts your freedom of subject matter which can be drawn.

The colour palette used with B.Spell contains a selection of primary and secondary colours plus white and black. If you change the colours in your picture the Construction Set will restore them to their originals on converting the pictures. This seems to be an unnecessary handicap.

Having completed your pictures you have to undergo a somewhat confusing transference of files from your work disc to the destination disc. This involves using a Set command to set up 26 picture data files on your destination disc. Within this command option you also need to type in the word to go with each picture.

A Single command enables you to overwrite an existing picture on the destination disc for handy updating or correction. Meanwhile the Edit command allows you to alter the spelling of a word – particularly handy if you discover that having converted all your pictures you have made a spelling mistake.

The Spellbook Alphabet Creator is a similar tool, to use with Softstuff's much vaunted Spellbook program. Like the Construction Set, it allows you to draw pictures from within your art package and transport them for use in the mother spelling program.

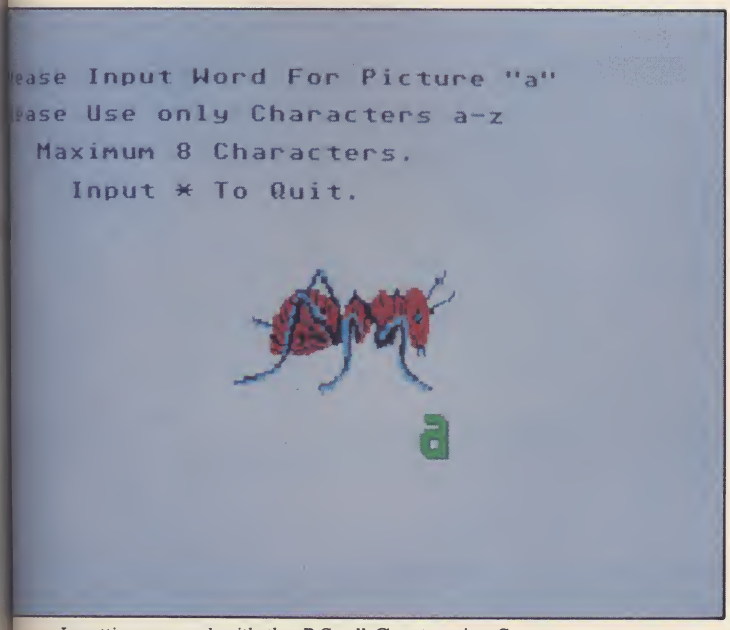
The main difference here is that any colour palette can be used. Further to this Alphabet Creator will accept converted Degas or Neochrome pictures. The disc also includes an upgrade Spellbook program which can be copied on to your original Spellbook disc.

A bonus is that Softstuff is supplying on the program disc the free PD art package Neochrome. This saves you from having to search for or pay for an art package.

There is no need to unarchive any files with the Alphabet Creator. All you have to do is to format one blank disc and copy a chosen Template file – either Degas or Neochrome – plus a PAGES–BO.ARD program on to this disc.

Now boot up your art package disc and load the chosen Template file. Any pic-

Turn to Page 112 ►



Inputting a word with the B.Spell Construction Set

The Spellbook Alphabet Creator

◀ From Page 111

tures you create can be saved using the filenames ABCD, EFGH and so on, on your formatted disc.

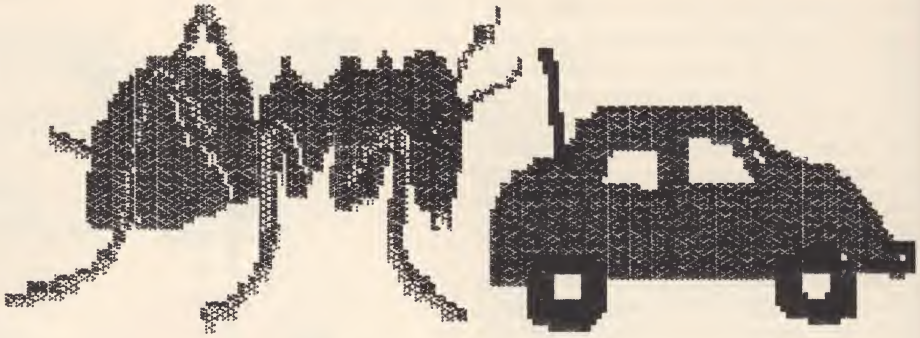
When complete, a simple three option menu allows you to convert your picture files into a format that Spellbook can read, along with the colour palette for that picture, so you can use a different colour palette for each set of four letters.

Via the menu you then create a PICTURES.SPL folder and the pictures together with the PAGES–BO.ARD program are transferred to this folder. Another option allows the creation of a Spellbook alphabet where a unit of 26 pictures can be created and saved.

Alphabet Creator allows complete control over the content of your Spellbook program in a simple and user-friendly way. The only restriction – as with Construction Set – being that of seven letters to a word.

In conclusion

Both programs do their respective jobs admirably, though I found Alphabet Creator more flexible and easier to use. As I originally found Spellbook to be the superior of the two mother programs, I would have no hesitation in recommending Alphabet Creator. However, if you are already an owner of B.Spell then the Construction Set is a handy utility to extend the range of the program.



FACT FILE

Product: Alphabet Creator
Price: £9.95
Supplier: Softstuff, 193 Sketchley Road, Burbage, Leicestershire LE10 2DY.
Tel: 0455 617426

POINTS FOR:
Simple to use. Upgrade of Spellbook available. Bundled Neochrome art package.

AGAINST:
Manual instructions could be slightly clearer.

FACT FILE

Product: B.Spell Construction Set
Price: £9.95
Supplier: B.Bytes Computer Systems, 19 Southfield Road, Hinckley, Leicestershire LE10 1UA.
Tel: 0455 613377

POINTS FOR:
Does the job well. Allows for creation of a library of many pictures to use with B.Spell.

AGAINST:
Awkward and time consuming to use. No bundled art package. Restricted palette.

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Julie Boswell browses through more than 200 quality illustrations

Illustrator's gallery

IF, like mine, your drawing ability leaves a lot to be desired, take heart, for to the rescue comes Scan Art and Draw Art, two packages that between them contain more than 200 pictures on four discs. These are professionally drawn, high quality images created by top artists.

In the case of Scan Art the images have been taken from original line drawings then scanned at either 150 or 200 dots per inch and retouched once on screen. They have been saved as IMG files so you'll need a DTP or art package that can handle this format. Timeworks Desktop Publisher and Supercharged Easy Draw are two such packages.

Figure I shows one of the scanned drawings from the Bears folder of Scan Art. To produce this dump it has been loaded into Atari's Hyperpaint after selecting the IMG file format.

Draw Art illustrations are completely different in that they are object-oriented rather than bit mapped. This means that a circle is stored as a particular class of object – a circle – and not as a screen image. When zooming in on a screen image using the magnify function of an art package the pixels simply become larger and detail is lost.

However, when zooming in on an object-oriented drawing each item becomes bigger and fills a larger portion of the screen, the pixels staying the same size. When zooming in on a circle say, it is simply re-drawn much larger.

This type of artwork requires a special type of drawing package that can load the GEM files produced and manipulate the objects contained within them. The screen dump in Figure II was created by loading two of the illustrations into Easy Draw 2. Publisher ST can also be used.

Once the illustrations have been loaded into say, Easy Draw, they can be magnified, reduced, and stretched vertically or horizontally by simply pointing, clicking and dragging with the mouse.

The manuals show dumps of all the pictures on the discs alongside their filenames. This makes them handy for browsing through and choosing your artwork without having to laboriously load and display each one.

To sum up, the two packages provide a huge collection of images of all sizes ready to be included in your diagrams, drawings and news letters. Not only do they provide professionally drawn illustrations for amateur artists like myself, they also cut down on the amount of time spent creating your finished product by providing ready made artwork.

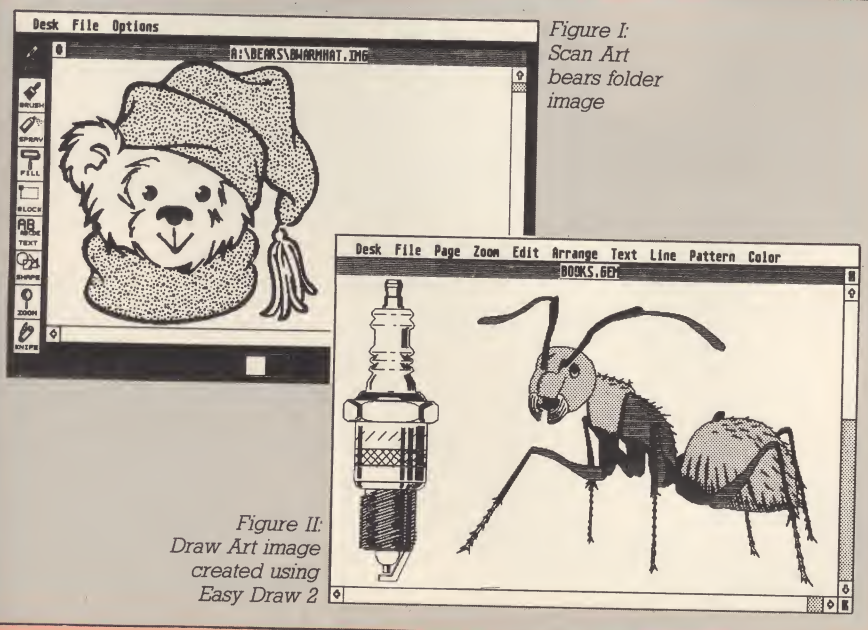

Figure I: Scan Art bears folder image

Figure II: Draw Art image created using Easy Draw 2

FACT FILE

Product: Scan Art
Price: £39.95
Product: Draw Art
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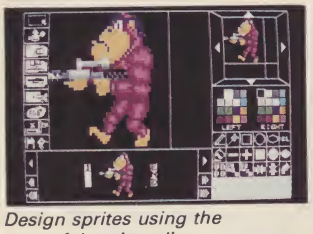
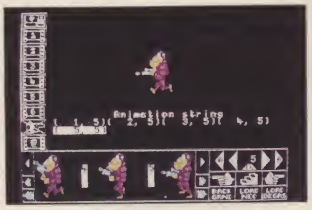


Design sprites using the powerful sprite editor



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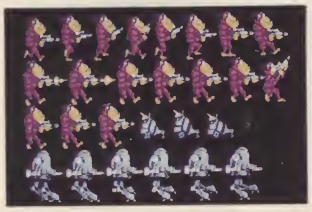

Choose from a range of example sprites included with STOS

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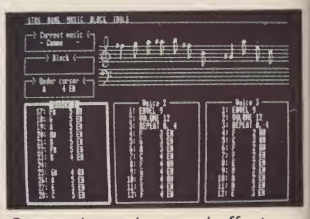

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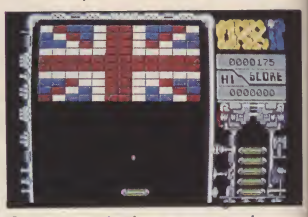

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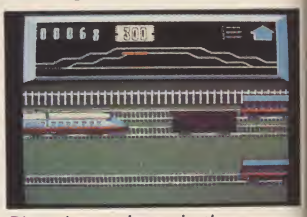
Draw the flight paths of the attacking aliens in Zoltar



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- The game must take up no more than three discs and run on an Atari 520ST, but may include extra parts which require one megabyte of memory.
- Copyright for the winning game will belong to Mandarin who will market the software. A royalty will be paid for every copy sold, and royalties will also be paid if the game is converted to other formats.
- An advance and royalty will be paid for any other top games received which are suitable for release.
- In the unlikely event that no commercially viable game is received the money will be added to the cash prize for the following year's award.
- The Award is not open to the staff at Mandarin, Europress or Jawx, or their families.

Please include instructions for loading and playing, and put your name and address on EACH disc as well as on all correspondence.

Your discs will be returned *free of charge* together with suggestions for further improvement so that the game can be refined and resubmitted before the closing date.

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Colourful conversion

Convert your 16 colour Neochrome pictures to monochrome with this flexible Basic utility from Michael Croning

DITHER is a graphics utility written in Computer Concepts' Fast Basic designed to convert 16-colour Neochrome artwork to full screen monochrome dithered pictures – like a black and white newspaper photograph, the resultant picture is made up of tiny dots. It features an add-on module system for providing additional picture processing facilities.

Degas Elite owners will already be able to convert Neochrome pictures to monochrome, but Dither provides many features not otherwise available. For instance, it incorporates a useful brightness control. Once a picture has been converted, pressing the up and down arrow keys increases and decreases brightness respectively.

The function keys – displayed at the top of the screen – are used to select the program options:

F1 Load and convert Neochrome file.
F2 Save monochrome image with extension IMG.
F3 Print picture using the OUTDUMP command of Fast Basic.
F4 Load external module.
F5 Execute external module.
F10 Leave program.

The conversion routine is extremely quick as it is written almost entirely in assembly language using Fast Basic's built-in assembler. Dither patterns are picked automatically as the program reads the colour palette intensities and makes the selections accordingly.

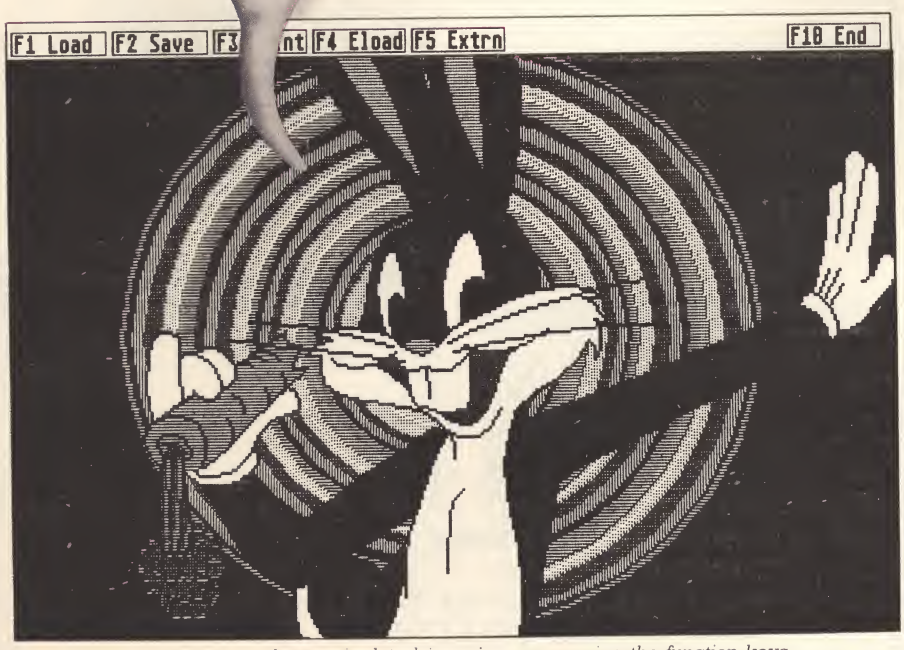
The routine is speeded up by using memory addresses instead of x,y coordinates. Rather than fetching a single pixel at a time, which would be very inefficient, the colours of the 16 monochrome pixels are calculated from four words fetched from the screen. The colours are temporarily stored in a buffer.

To maximise efficiency when drawing the dithered squares, two long words are built up, then written to memory. These represent the 16 pixels stored in the buffer. Writing long words (four bytes) is more efficient than words (two bytes).

Enter the program listing into Fast Basic, but remember not to enter the line numbers, which are there simply to make the listing easier to read. The program requires a workspace of 77k so this must be set by clicking on Show Info on the Files menu.

Modules have to be entered and saved separately – they provide the extra picture processing functions such as mirror,

Turn to Page 119 ►



The converted picture can be manipulated in various ways using the function keys

PROCEDURES	
initscreen	Initialises the screen
drawmenu	Draws the menu
outline	Draw the outlines around the menu
initdata	Initialises variables and arrays
assemble	Machine code
getkey	Checks the keyboard
load	Loads and converts a Neochrome picture
save	Saves converted picture

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◀ **From Page 117**

reduce vertically and horizontally and so on. Enter each one and save it with the file extension EXT. You can't run them independently as they can only be called from the main program.

The modules consist of ordinary Fast Basic programs which are used to process the monochrome image on the screen. In the panel are a few short and simple modules to give an example of their use; you can add more of your own.

HALFH.EXT and HALFV.EXT require a parameter to be entered which tells Dither the colour the rest of the screen will be after reducing the picture – 0 is white, 1 black. The file extension EXT is simply to differentiate them from stand-alone programs. The module system is implemented using Fast Basic's ability to hold 10 programs in memory at once.

INVERT.EXT	*Invert the screen to give a negative.*
HALFH.EXT	*Compress the screen to half size horizontally.*
HALFV.EXT	*Compress the screen to half size vertically.*
HSWITCH.EXT	*Swaps the screen in a left <--> right fashion.*
VSWITCH.EXT	*Turns the picture upside down.*

Pressing F4 automatically picks which segment to use. It attempts to find the first free segment, and if there isn't one it uses the segment which contains the module that has been least used. F5 executes a module.

A list of the contents of the segments is displayed and a number should be pressed according to the one required. A parameter can then be entered in order to pass data to the module.

When control is returned to the main program an alert box appears asking you whether you want to keep the changes. If not, the screen is restored to its original appearance before executing the module.

```
  10 \ HALFH.EXT
  20 \ In Fast Basic
  30 \ Workspace required 1k
  40 PROChalfhorizontal
  50 END
  60 DEF PROChalfhorizontal
  70 LOCAL xoutput%,xsource%
  80 FOR xsource%=0 TO 639 STEP 2
  90 BLIT @smfdb&(0),xsource%,0,1,400
,@pmfdb&(0),xoutput%,0,3
 100 xoutput%=xoutput%+1
 110 NEXT
 120 CLG VAL(LEFT$(extparam$,1))
 130 BLIT @pmfdb&(0),0,0,320,400,@smf
db&(0),0,0,3
 140 ENDPROC
```

```
  10 \ HALFV.EXT
  20 \ In Fast Basic
  30 \ Workspace required 1k
  40 PROChalfvertical
  50 END
  60 DEF PROChalfvertical
  70 LOCAL youtput%,ysource%
  80 FOR ysource%=0 TO 399 STEP 2
  90 BLIT @smfdb&(0),0,ysource%,640,1
,@pmfdb&(0),0,youtput%,3
 100 youtput%=youtput%+1
 110 NEXT
 120 CLG VAL(LEFT$(extparam$,1))
 130 BLIT @pmfdb&(0),0,0,640,200,@smf
db&(0),0,0,3
 140 ENDPROC
```

```
  10 \ HSWITCH.EXT
  20 \ In Fast Basic
  30 \ Workspace required 1k
  40 PROCswitchhorizontal
  50 END
  60 DEF PROCswitchhorizontal
  70 LOCAL xsource%
  80 FOR xsource%=0 TO 639
  90 BLIT @smfdb&(0),xsource%,0,1,400
,@pmfdb&(0),639-xsource%,0,3
 100 NEXT
 110 BLIT @pmfdb&(0),0,0,640,400,@smf
db&(0),0,0,3
 120 ENDPROC
```

```
  10 \ VSWITCH.EXT
  20 \ In Fast Basic
  30 \ Workspace required 1k
  40 PROCswitchvertical
  50 END
  60 DEF PROCswitchvertical
  70 LOCAL ysource%
  80 FOR ysource%=0 TO 399
  90 BLIT @smfdb&(0),0,ysource%,640,1
,@pmfdb&(0),0,399-ysource%,3
 100 NEXT
 110 BLIT @pmfdb&(0),0,0,640,400,@smf
db&(0),0,0,3
 120 ENDPROC
```

```
  10 \ INVERT.EXT
  20 \ In Fast Basic
  30 \ Workspace required 1k
  40 PROCinvert
  50 END
  60 DEF PROCinvert
  70 LOCAL ycoord%
  80 GRAFMODE 3
  90 FOR ycoord%=0 TO 399
 100 LINE 0,ycoord% TO 639,ycoord%
 110 NEXT
 120 GRAFMODE 1
 130 ENDPROC
```

```
  10 \ Dither
  20 \ by MDR Croning
  30 \ (c) Atari ST User 1989
  40 \ Written In Fast Basic
  50 \ Don't enter line numbers!
  60 \ Workspace required 77k
  80 ON ERROR GOTO errhandle
 100 ESCAPE OFF
 110 PROCinitscreen
 120 PROCinitdata
 130 PROCdrawmenu
 140 PROCassemble
 150 HIDEMOUSE
 170 main:
 180 REPEAT:PROCgetkey:UNTIL FALSE
 200 DEF PROCinitscreen
 210 CLOSEWIND OUTHANDLE:DELETEWIND O
UTHANDLE
 220 CLOSEWIND IMMHANDLE:DELETEWIND I
MMHANDLE
 230 FOR I%=1 TO 10
```

```
 240 CLOSEWIND SEGHANDLE(I%):DELETEWI
ND SEGHANDLE(I%)
 250 NEXT
 260 GRAFRECT 0,0,SCREENWIDTH,SCREENH
EIGHT:CLG 0
 270 ENDPROC
 290 DEF PROCdrawmenu
 300 FILLSTYLE 1,0:FILLCOL 0:RECT 0,0
,639,19
 310 GTXT 5,15,"F1 Load  F2 Save  F3
Print F4 Eload F5 Extrn"+STRING$(26,"
")+"F10 End"
 320 Y%=17:FOR X%=2 TO 290 STEP 72:PR
OCoutline(X%):NEXT
 330 PROCoutline(562):LINE 0,20 TO 63
9,20
 340 ENDPROC
 360 DEF PROCoutline(X%)
 370 FILLCOL 1:FILLSTYLE 0,0
 380 GRAFMODE 2
 390 BAR X%+1,Y%,X%+68,Y%-15
 400 GRAFMODE 1
 410 ENDPROC
 430 DEF PROCinitdata
 440 RESERVE neobuff%,32768
 450 neobuff%=(neobuff%+512) AND $FFF
F00
 460 P$=PATH$
 470 F$="":picture!=0:bright=0
 480 DIM int!(15),dith!(15),patt!(15)
,seguse&(10),smfdb&(9),pmfdb&(9),desk&
(11),sinit!(10)
 490 extparam$=""
 500 RESERVE processbuff%,32000
 510 RESERVE pattern%,16
 520 RESERVE buffer%,19
 530 buffer%=buffer%+18
 540 FOR I%=0 TO 15:READ patt!(I%):NE
XT
 550 FOR I%=0 TO 11:READ desk&(I%):NE
XT
 560 DATA 15,7,14,11,13,6,10,3,9,5,12
,2,8,1,4,0
 570 DATA -1,-1,-1,20,0,0,0,$11B7,0,2
1,640,379
 580 SETDESK @desk&(0),0:HIDEMOUSE
 590 DRAWOBJECT @desk&(0),0,99,0,0,64
0,400
 600 smfdb&(0)=LOGBASE>>16:smfdb&(1)=
LOGBASE AND $FFFF
 610 smfdb&(2)=640:smfdb&(3)=400:smfd
b&(4)=40:smfdb&(6)=1
```

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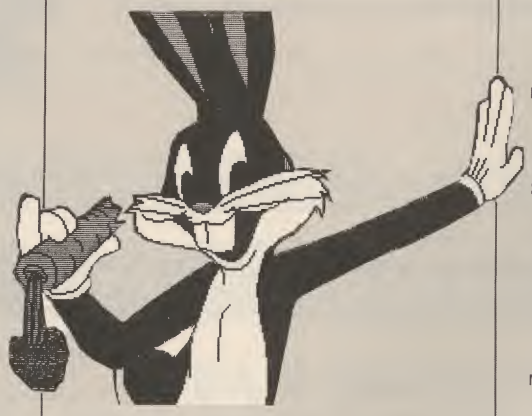
◀ *From Page 119*

```
 620 pmfdb&(0)=processbuff%>>16:pmfdb
&(1)=processbuff% AND $FFFF
 630 pmfdb&(2)=640:pmfdb&(3)=400:pmfd
b&(4)=40:pmfdb&(6)=1
 640 ENDPROC
 660 DEF PROCassemble
 670 LOCAL pass%
 680 RESERVE code%,$500
 690 FOR pass%=1 TO 2
 700 [
 710 OPT pass%,"L-W-"
 720 ORG code%
 730 convert
 740 CLR.L D6
 750 CLR.L D7
 760 MOVE.W #199,D6
 770 MOVE.L @neobuff%,A0
 780 MOVE.L @buffer%,A6
 790 LEA PHYSBASE,A1
 800 MOVE.L A1,A2
 810 ADDA.L #80,A2
 820 MOVE.L @pattern%,A3
 830 nline
 840 MOVE.L #19,D7
 850 nrast
 860 JSR fetchnumbers
 870 JSR draw16
 880 DBF D7,nrast
 890 MOVE.L A2,A1
 900 ADDA.L #80,A2
 910 DBF D6,nline
 920 RTS
 930 fetchnumbers
 940 MOVE.W (A0)+,D0
 950 MOVE.W (A0)+,D1
 960 MOVE.W (A0)+,D2
 970 MOVE.W (A0)+,D3
 980 CLR.L D4
 990 nextpixel
1000 CLR.B D5
1010 BTST D4,D0
1020 BEQ nobit1
1030 ADDQ.B #1,D5
1040 nobit1
1050 BTST D4,D1
1060 BEQ nobit2
1070 ADDQ.B #2,D5
1080 nobit2
1090 BTST D4,D2
1100 BEQ nobit3
1110 ADDQ.B #4,D5
1120 nobit3
1130 BTST D4,D3
1140 BEQ nobit4
1150 ADDQ.B #8,D5
1160 nobit4
1170 MOVE.B D5,-(A6)
1180 ADDQ.B #1,D4
1190 CMP.B #16,D4
1200 BMI nextpixel
1210 RTS
1220 draw16
1230 CLR.L D2
1240 CLR.L D4
1250 CLR.L D5
1260 MOVE.L #31,D0
1270 MOVE.L #15,D1
1280 nxtsqr
1290 MOVE.B (A6)+,D2
1300 MOVE.B 0(A3,D2.W),D3
1310 BTST #3,D3
1320 BEQ noul
1330 BSET D0,D4
1340 noul
1350 BTST #1,D3
1360 BEQ noll
1370 BSET D0,D5
1380 noll
1390 SUBQ.B #1,D0
1400 BTST #2,D3
1410 BEQ nour
1420 BSET D0,D4
1430 nour
1440 BTST #0,D3
1450 BEQ nolr
1460 BSET D0,D5
1470 nolr
1480 SUBQ.B #1,D0
1490 DBF D1,nxtsqr
1500 MOVE.L D4,(A1)+
1510 MOVE.L D5,(A2)+
1520 RTS
1530 ]
1540 NEXT pass%
1550 ENDPROC
1570 DEF PROCgetkey
1580 K%=INP(2)>>8
1590 SWITCH K%
1600 CASE $3B:PROCload
1610 CASE $3C:PROCsave
1620 CASE $3D:PROCprint
1630 CASE $3E:PROCexternalload
1640 CASE $3F:PROCexternal
1650 CASE $44:PROCend
1660 CASE $48:PROCbrightness(1)
1670 CASE $50:PROCbrightness(-1)
```



```
1680 ENDSWITCH
1690 ENDPROC
1710 DEF PROCload
1720 A%=0
1730 LOCAL flagl,cw&,pathbuff$
1740 IF picturel=1 THEN
1750 SHOWMOUSE
1760 A%=ALERT("[2][Loading another pi
c will|kill the present one, ok ?][Yes
|No]",2)
1770 HIDEMOUSE
1780 ENDIF
1790 IF A%=2 THEN ENDPROC
1800 pathbuff$=PATH$
1810 P$=P$+"*.NEO"
1820 SHOWMOUSE:FSELECT P$,F$,flagl:HI
DEMOUSE
1830 WHILE RIGHT$(P$,1)<>"\":P$=LEFT$
(P$,LEN(P$)-1):WEND
1840 IF flagl=0 OR F$="" THEN PROCfix
screen:PATH$=pathbuff$:ENDPROC
1850 CLG 0
1860 PATH$=P$:BLOAD F$,neobuff%-128
1870 FOR I%=0 TO 15
1880 cw&={neobuff%-124+I%*2}&
1890 intl(I%)=(cw&>>8 AND 7)+(cw&>>4
AND 7)+(cw& AND 7)
1900 NEXT
1910 PROCsort:CALL convert
1920 GRAB 0,0,640,400
1930 PROCdrawmenu
1940 picturel=1:bright=0
1950 K%=0:PATH$=pathbuff$
1960 ENDPROC
1980 DEF PROCfixscreen
1990 IF picturel=1 THEN PUT 0,0,3 ELS
E DRAWOBJECT @desk&(0),0,99,0,0,640,40
0
2000 PROCdrawmenu
2010 ENDPROC
2030 DEF PROCsave
2040 LOCAL flagl,pathbuff$
2050 IF picturel=0 THEN PROCnopicture
:ENDPROC
2060 pathbuff$=PATH$
2070 P$=P$+"*.IMG"
2080 SHOWMOUSE:FSELECT P$,F$,flagl:HI
DEMOUSE
2090 WHILE RIGHT$(P$,1)<>"\":P$=LEFT$
(P$,LEN(P$)-1):WEND
2100 IF flagl=0 OR F$="" THEN PROCfix
screen:PATH$=pathbuff$:ENDPROC
2110 PUT 0,0,3
2120 PATH$=P$
2130 IF DISKFREE(-1)<34000 THEN PROCd
iskfull ELSE BSAVE F$,PHYSBASE,32000
2140 PROCdrawmenu
2150 K%=0:PATH$=pathbuff$
2160 ENDPROC
2180 DEF PROCdiskfull
2190 A%=ALERT("[3][Not enough space o
n disk][Ok]",1)
2200 ENDPROC
2220 DEF PROCprint
2230 IF picturel=0 THEN PROCnopicture
:ENDPROC
2240 PUT 0,0,3
2250 OUTDUMP
2260 PROCdrawmenu
2270 ENDPROC
2290 DEF PROCnopicture
2300 SHOWMOUSE
2310 A|=ALERT("[1][No picture in|memo
ry][Ok]",1)
2320 HIDEMOUSE
2330 ENDPROC
2350 DEF PROCexternalload
2360 LOCAL flagl,pathbuff$,file$
2370 pathbuff$=PATH$
2380 P$=P$+"*.EXT"
2390 SHOWMOUSE:FSELECT P$,file$,flagl
2400 HIDEMOUSE:PROCfixscreen
2410 WHILE RIGHT$(P$,1)<>"\":P$=LEFT$
(P$,LEN(P$)-1):WEND
2420 IF flagl=0 OR file$="" THEN PROC
fixscreen:PATH$=pathbuff$:ENDPROC
2430 I%=FNnextseg
2440 PATH$=P$:INSTALL file$,I%
2450 HIDEMOUSE:K%=0:PATH$=pathbuff$
2460 seguse&(I%)=1:sinitl(I%)=0
2470 ENDPROC
2490 DEF FNnextseg
2500 LOCAL S%,val&
2510 val&=32000
2520 FOR I%=1 TO 10
2530 IF (seguse&(I%)<val&) AND (I%<>S
EGMENT) THEN S%=I%:val&=seguse&(I%)
2540 NEXT
2550 =S%
```

Turn to Page 123 ▶

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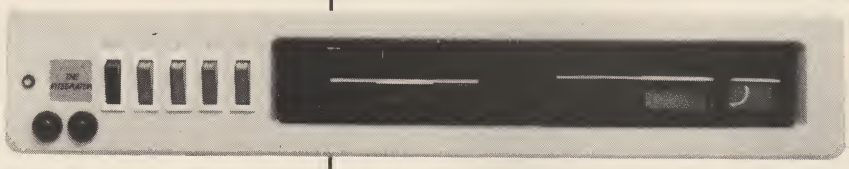

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◀ *From Page 121*

```
 2570 DEF PROCexternal
 2580 LOCAL num$,name$
 2590 IF picture|=0 THEN PROCnopicture
:ENDPROC
 2600 BAR 200,100,440,274
 2610 BAR 203,103,437,271
 2620 TXTRECT 206,112,232,170
 2630 TXTSIZE 13
 2640 PRINT TAB(6,0)"External Function
s"
 2650 PRINT:TXTSIZE 6
 2660 FOR I%=1 TO 10
 2670 IF SEGFREE(I%)=TRUE THEN name$="
Empty" ELSE name$=SEGNAME$(I%)
 2680 IF I%<>SEGMENT THEN PRINT TAB(3,
I%+2);I%-1;". ";name$
 2690 NEXT
 2700 PRINT TAB(1,15)"Press A (abort)
or a number"
 2710 getnumber:
 2720 A$=GET$
 2730 IF A$="A" OR A$="a" THEN PROCfix
screen:ENDPROC
 2740 IF (VAL(A$)=0) OR (SEGFREE(VAL(A
$)+1)=TRUE) OR (VAL(A$)+1=SEGMENT) THE
N BEEP:GOTO getnumber
 2750 TXTSIZE 4:INPUT TAB(2,23)"Param:
"extparam$
 2760 PUT 0,0,3
 2770 seguse&(VAL(A$)+1)=seguse&(VAL(A
$)+1)+1
 2780 PERFORM VAL(A$)+1
 2790 SHOWMOUSE
 2800 A%=ALERT("[2][Keep changes ?][Ye
s|No]",2)
 2810 HIDEMOUSE
 2820 IF A%=2 THEN PROCfixscreen:ENDPR
OC
 2830 GRAB 0,0,640,400:PROCdrawmenu
 2840 ENDPROC
 2860 DEF PROCend
 2870 SHOWMOUSE
 2880 A%=ALERT("[3][Are you sure you|w
ish to leave|the program ?][Yes|No]",2
)
 2890 HIDEMOUSE
 2900 IF A%=2 THEN ENDPROC
 2910 FOR I%=1 TO 10
 2920 IF (I%<>SEGMENT) AND (SEGFREE(I%
)=FALSE) THEN TRASH I%
 2930 NEXT
 2940 END
 2960 DEF PROCbrightness(I)
 2970 IF picture|=0 THEN PROCnopicture
:ENDPROC
 2980 bright=bright+I
 2990 FOR I%=0 TO 15
 3000 A%=FNcheckbounds(dith|(I%)+brigh
t)
 3010 {pattern%+I%}|=patt|(dith|(A%))
 3020 NEXT
 3030 CLG 0:CALL convert
 3040 GRAB 0,0,640,400:PROCdrawmenu
 3050 ENDPROC
 3070 DEF FNcheckbounds(chk)
 3080 IF chk<0 THEN chk=0
 3090 IF chk>15 THEN chk=15
 3100 =chk
 3120 DEF PROCsort
 3130 FOR I%=0 TO 15
 3140 val|=50
 3150 FOR II%=0 TO 15
 3160 IF int|(II%)<val| THEN number|=I
I%:val|=int|(II%)
 3170 NEXT II%
 3180 int|(number|)=50:dith|(number|)=
I%
 3190 NEXT I%
 3200 FOR I%=0 TO 15
 3210 {pattern%+I%}|=patt|(dith|(I%))
 3220 NEXT
 3230 ENDPROC
 3250 errhandle:
 3260 A%=0
 3270 IF ERR=93 AND K%=0 THEN PROCerri
nstall:GOTO main
 3280 IF ERR>73 THEN
 3290 A$="[3][BIOS/GEMDOS error "+STR$
(ERR)+" ][Ok]"
 3300 A%=ALERT(A$,1)
 3310 ENDIF
 3320 IF ERR=54 THEN A%=ALERT("[3][Seg
ment load|error][Ok]",1)
 3330 IF A%=0 THEN LASTERROR
 3340 PROCfixscreen
 3350 PROCerrinstall
 3360 GOTO main
 3380 DEF PROCerrinstall
 3390 ON ERROR GOTO errhandle
 3400 ENDPROC
```


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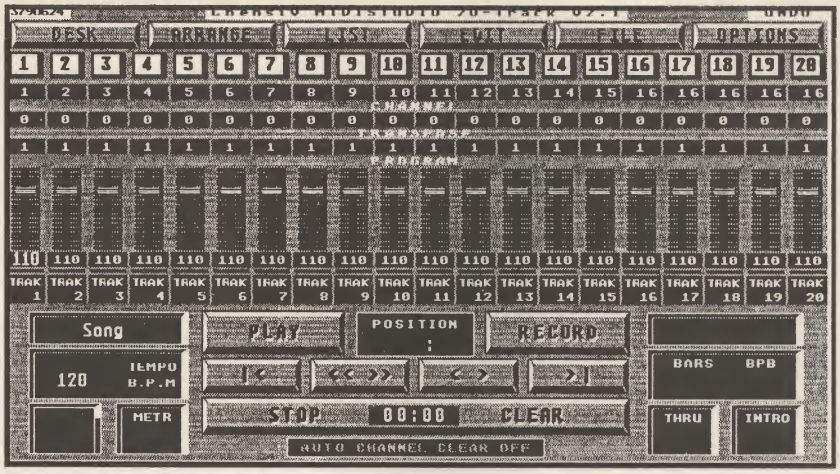

" Out performs Pro-24 v2.1 in almost every way "
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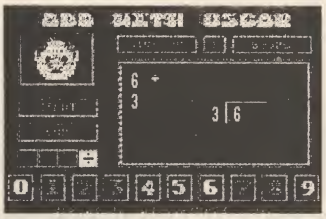

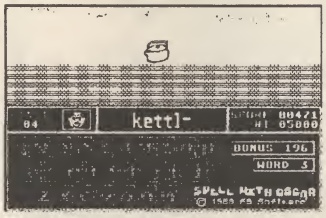

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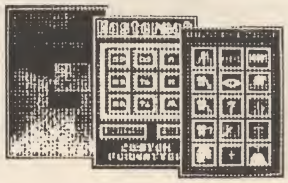

Picstrip is a utility that captures all or part of a picture file for use in Basic programs, supports GFA, FAST, HISOFT and ST Basics and is Degas, Neochrome and AB Animator compatible.

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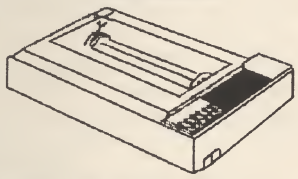

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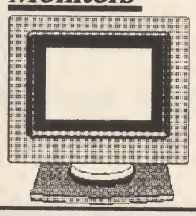

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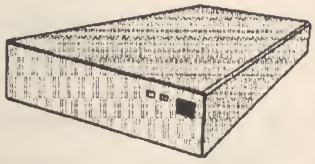

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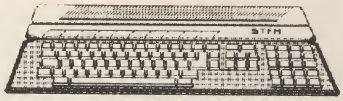

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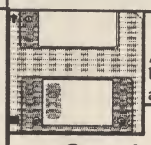

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Top marks...

Nic Outterside reviews a primary education package designed to teach early mathematics

DURING the past nine months Softstuff has deservedly established itself at the top of the ST educational software tree. Each release offers something new and exciting to anyone involved in education, so I was eager to see the company tackle the often perplexing topic of primary school mathematics.

Things to do with Numbers comes on a single sided disc packaged in the now familiar exercise book-type folder, with accompanying full documentation. It is a suite of three programs, each tackling a different aspect of primary school maths.

Click on the THINGS_N.PRG and the program boots up quickly with a colourful loading screen. This is replaced by a picture of Buddy and Betty book bugs who welcome you to the exercises ahead.

Now installed, the software is extremely easy to use. The screen displays four small pictures – a watch, a train, a search panel and The End – in turn. To select a program, wait for your chosen picture to appear and hold down the left mouse button. The game associated with that picture can then be played. As each is chosen it is preceded with a page of on-screen instructions on how to operate the exercise.

Click on the Search box to select Book Search. This is a colourful 10 by 10 grid in which is hidden Betty book bug. Your job is to find her while learning about coordinates. You do this by clicking on sliding bars which determine lateral and vertical movement. Then begin the search by clicking on the Search box. Buddy will chew through the squares to find his love.

A thermometer at the side of the grid lets you know how close you are to finding Betty. It measures hot if you are only one square away, warm if you are two or three squares away or cold if you are more distant. You can have as many turns as you like.

When you find the correct square the red alcohol bursts through the top of the thermometer with a startling sound of shattering glass, and Buddy utters the immortal words "Found you".

Click on the watch to choose Time Teller. This simple but effective game aims to teach and consolidate telling the time using the 24 hour clock juxtaposed to the rotary 12 hour clock.

On the left of the screen is a large clock whose minute and hour hands move to randomly programmed times. A shiny modern digital watch occupies the space to the right of it. The LED display flashes either AM or PM and you must click on the correct numbers in a small grid to represent the time shown on the rotary clock.

If it is too difficult you can pass on to another question, or if incorrect you are also offered an alternative time. However, if correct you are applauded by Buddy and Betty who sit at the top of the screen.

Click on the train and you enter the world of steam with All Aboard. The object here is to construct a train with a given number of passengers on board using a number grid at the foot of the screen. If the answer is correct the train issues a realistic whistle.

A restriction is placed by Buddy on the numbers you can use to encourage you to use addition and multiplication to arrive at the correct answer. The pass option is useful here for younger children who are not yet able to manage breakdown of larger numbers.

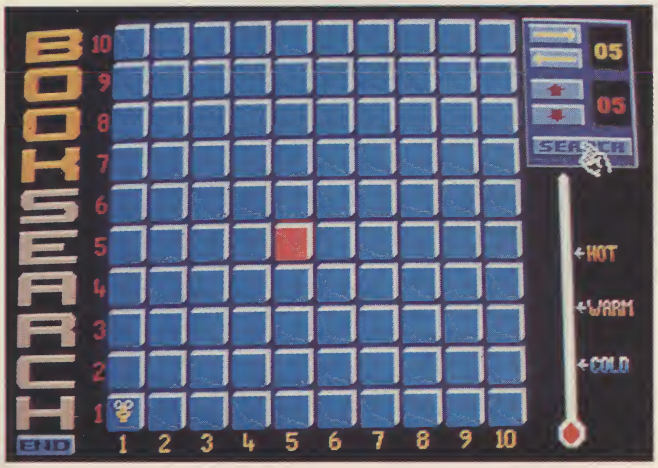
Finally by clicking on The End you exit via a lovely picture of Buddy and Betty who wish you "Bye Bye".

The graphics throughout are not quite in the Psygnosis league but are simple and stunning. Furthermore they do their job admirably – that is make the exercises enjoyable. However, it would have been nice to have seen a bit of animation, particularly with the train.

The sound effects and synthetic speech are superb and highlight various points in the programs.

Once again Softstuff has filled a need in the educational market with an excellent product. Moreover the teaching content and purpose is sound and will be beneficial in the home and classroom alike.

Time Teller teaches understanding of the 24 hour clock



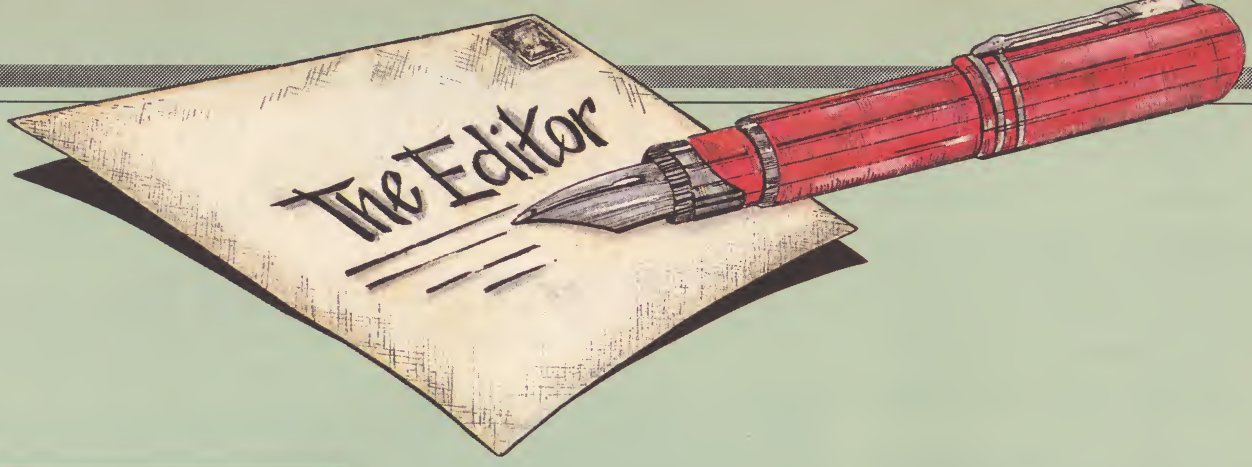
Booksearch consolidates coordinates

FACT FILE

Product: Things to do with Numbers
Price: £19.95
Supplier: Softstuff, 193 Sketchley Road, Burbage, Leicestershire LE10 2DY.
Tel: 0455 617426

POINTS FOR:
User friendly and colourful learning program. Educationally sound and fun.

AGAINST:
Nothing substantial except that development of graphic animation and musical sound would have added enjoyment



Basic drawback with 520STFM

WITH regard to the letter from Serge Flamat in the February issue of Atari ST User, *I would like to draw your attention to a statement made by Atari (UK):*

"One of the first things you may have noticed about your new Atari 520STFM is that it does not come with a version of Basic. Far from being a drawback this is actually a positive advantage as you are now free to choose any version from those available for the ST".

This quotation appears in Atari Explorer as supplied with all new ST Super Packs. So as you can see new users don't even get ST Basic with their machine.

What is going on? – **M.D.Cox, Upper Norwood, London.**

● At first glance the statement by Atari in the Explorer Pack does seem to leave a lot to be desired. It is like saying: "We decided not to include a disc drive with your ST so you would have the freedom to choose from one of the many better drives available"!

ST owners had the freedom to choose another Basic before Atari decided not to include ST Basic with their 520STFM micros.

We rang Atari and asked for an explanation of this strange stance. The reply goes some way to putting a few minds at rest. The company decided to withdraw ST Basic because it recognised it was a very poor cousin in comparison with other third party versions.

Atari then searched for a better replacement to bundle with future machines and in the interim launched the Explorer Pack to compensate for the lack of a Basic. From this month a new 520STFM bundle will be launched by Atari. It will be called The Power Pack and will include 20 games, The ST Organiser and HiSoft First Basic.

This is infinitely superior to ST Basic and fully compatible in that it will compile ST Basic. This new move by Atari still doesn't help recent buyers of 520STs who are in need of a Basic, but it does show that Atari is willing to be introspective and admit that other companies can produce a better Basic for the ST.

To recent buyers who still feel the need for ST Basic, we can only suggest that you write directly to Atari enclosing a stamped addressed envelope and ask for a copy.

Drive queries

I HAVE recently been contemplating buying a 1Mb second disc drive for my 520STFM, but before I do could you answer a few questions?

When I buy a piece of software I usually make a backup copy for safety. Can I store two games – or other programs – on one double-sided disc?

Can I boot a program straight from disc B? And will single sided discs work on the new drive? – **Chris Ralphs, Barnsley, South Yorkshire.**

● There is no obvious reason why programs on two single sided discs should not be stored on one double sided disc, providing they are not copy protected.

Booting directly from drive B can be a little tricky, but we have published simple routines for doing so in recent issues of *Atari ST User*. Such a procedure appeared on the Letters page in the February issue.

Finally, single sided discs will work perfectly well in a double sided drive.

Reviewing criticism

I HAVE now owned my 520STFM since January 1988, and have read Atari ST User *since October 1987. It is an excellent magazine covering every aspect of the ST, but I have one complaint.*

I think you should be a little more critical about the games you review. Just look at Hostages, the Star game in your January issue. I really do not think it earns those marks.

The first part of the game is dreadful. The controls are crude and response is slow. It even uses flip-screen scrolling, something which should not appear in quality ST games nowadays. – **Leif Einar Claus, Tromsø, Norway.**

● Thank you for your letter but three points need to be made, Leif. First of all any review is one person's opinion of a piece of software. This opinion will always be subjective, no matter how objective the reviewer may try to be.

Secondly, due to incredible pressure on space, we only publish reviews of the better games available for the ST. So scathing reviews of poor games rarely appear.

Thirdly, everyone in the office agreed that Hostages was an excellent and original game, and highly addictive to boot. At least two other ST magazines agreed with us and made Hostages their top game.

It is not a smooth scrolling shoot-'em-up and does not purport to be. It fits into a recent mould of excellent off-the-wall games for the ST which must also include Speedball, The President is Missing and Freedom.

Speling mishtakes

I BECAME involved with computers for the first time about 18 months ago and have happily occupied much of my spare time since then trying to catch up with the rest of the computer-literate population.

I am intrigued by the dreadful spelling mistakes in ReadMe and other document files which appear on many discs. PD Software seems to be the worst offender, although I have seen quite a few nasty examples in commercial games and utilities.

Quite apart from spoiling the presentation of an otherwise good piece of software, why is it that someone can be intelligent enough to write a complex piece of programming yet be unable to spell the words required to describe it properly?

I recently bought two expensive commercial utilities and both produced spelling errors on-screen, let alone on the ReadMe documentation. – **D.K. Powell, Tupsley, Hereford.**

● We agree with your observation. Have you also seen some of the spelling mistakes in procedures and REM statements in program listings? Most programmers come from a science background. The sciences and arts can often require completely different skills.

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loosening the screws underneath the body. On the monitor pinout, pin 4 is the mono detect. Find this pin – see below – and cut it so there is a gap in the wire. Fix a single pole single throw switch – available from any reputable electrical shop – to the back casing of your ST. Take a wire

Monitor

1	Audio out
2	Composite sync
3	General purpose output
4	Monochrome detect
5	Audio in
6	Green
7	Red
8	Plus 12-volt pullup
9	Horizontal sync
10	Blue
11	Monochrome
12	Vertical sync
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from each side of the cut pin 4 and carefully solder them to the two poles on the switch.

When the switch is open (off) you will be able to use your TV. Close the switch for using the monitor.

I have installed such a switch on my ST for some time now, and it works perfectly and saves much wear and tear on my monitor lead. – **Gavin Cameron, Gullane, East Lothian.**

● Thank you Gavin, we are sure this tip will prove useful to many ST owners.

Elite techniques

I HAD not played Elite before I bought the ST version of the game, but had heard so much about it from friends with BBC Micros that I must have been one of the first in line to buy when I heard that the ST version had been released. I enjoy it immensely and have played it at every opportunity, including one 12 hour non-stop stint.

What intrigues me most is that the saved game files are only 256 bytes long, yet they seem to hold so much information. Also there is an interesting rationale behind the score value listed in the Catalogue of Commanders, relating to when you acquire each of the skill rating levels.

It took me considerable time to find this information, but knowing it has enabled me to earn the Dangerous rating, fly two special missions and improved my playing ability.

The saved game files seem to be a special form of dump of the 256 byte status area which the Hacker v1.0 option on the ST version gives access to. Type SARA when the mode asks for a word from the manual, answer the next word request correctly and use the star on the numeric keypad to enter the routine from the Status screen, then press Escape to exit.

I find cheating unsatisfactory, but the option helped me to learn a lot more about the saved game file, which for those interested, is written to the file after XORing each byte with the NEGation of its address. By this I mean that the contents of byte one of the status area is XORed with FF, the second byte with FE, the third with FD and so on, down to the 256th byte being XORed with zero.

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In the adjoining chart I have listed the ships, along with the amount added to your skill points for killing one, the ship's speed and its manoeuvrability. I use these factors to decide whether it is worth pursuing a prey or running from it, and which ships to wipe out first.

Ship type	Skill	Speed gain	Turn factor
Thargoid	150	0.45	6
Wolf II	150	0.40	5
Asp Mark II	110	0.40	4
Adder	100	0.24	4
Krait	90	0.30	8
Gecko	90	0.30	7
Sidewinder	80	0.37	9
Mamba	60	0.32	9
Boa Class cruiser	60	0.24	4
Moray Star boat	50	0.25	4
Cobra III		0.30	8

Skill rating increases as follows:

0-2040	Harmless
2050-4090	Mostly Harmless
4100-8190	Poor
8200-16380	Average
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I think it is high time this type of conning was made illegal. Publishers and mail order companies should get their act together and put an end to this highly dubious practice. – **Steve Ogilvie, Ashington, Northumberland.**

● We wholeheartedly agree with your sentiments but must also draw your attention to our reply to Mark Clavering's letter in the March Letters page, which explains some of the reasons for this practice.

However, we can only act if you draw our attention to specific instances of advertisers in our magazine who offer products that are not available. We will add our weight and ensure that your complaint is passed on to the respective company, and that something is done about it.

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Does anyone know whether any British software company produces such a product or will I have to import it from the States? – **W.M. Bray, Wantage, Oxfordshire.**

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◀ From Page 129

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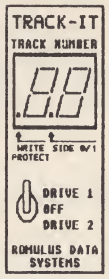

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ATARI ST USER

May 1989

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ATARI ST USER

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